Extron® Electronics
INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

ISM 824

Integration Scaling Multiswitcher

68-1123-01
Rev. A
02 08

Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE *This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.*

声明

所使用电源为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Quick Start — ISM 824
Integration Scaling Multiswitcher

Installation

Step 1

Turn off power to the input and output devices, and remove the power cords from them.

Step 2 — Video inputs

Inputs 1 through 8 — Connect RGB video, component video, S-video, or composite video to these female BNC connectors. See below for format.

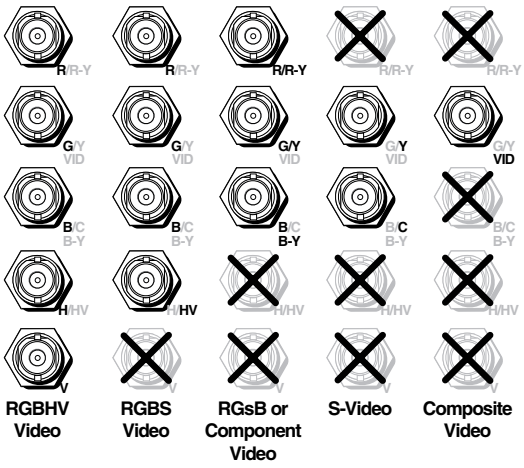


Figure Q-1 — Video format for BNC connections

Step 3 — Audio inputs

Inputs 1 through 8 — Connect up to eight stereo or mono audio inputs to the 5-pin captive screw input connectors. Wire the connectors as shown below.

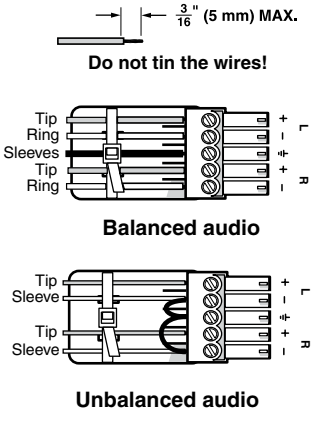


Figure Q-2 — Audio connections

Step 4 — Video outputs

a. **Pass-through outputs** — Connect video devices to the BNC connectors for outputs 1 and 2. Connect cables as shown in figure Q-1.

b. **Install any optional output boards** (see figure Q-3), and connect the relevant display device to the BNC connectors on the boards. See figure Q-1 for cabling format.

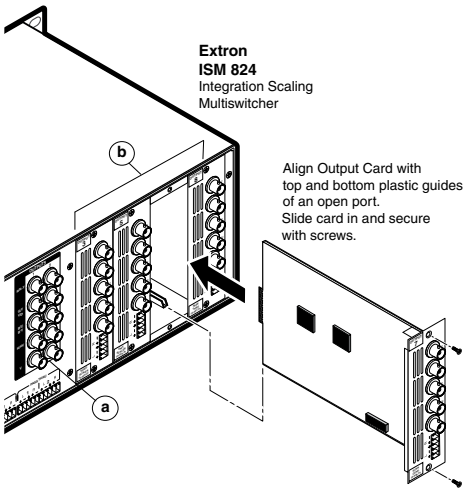


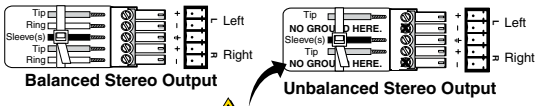
Figure Q-3 — Install Output cards

Step 5 — Audio outputs

Connect balanced or unbalanced stereo audio or mono audio devices to the 5-pin captive screw output connectors.

Step 6 — Serial ports

a. **If desired**, connect a control system or computer to the rear panel RS-232/RS-422 port.



CAUTION

For unbalanced audio, connect the sleeve(s) to the center contact ground. **DO NOT** connect the sleeve(s) to the negative (-) contacts.

Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	TX	Transmit data	TX	Transmit data (-)
3	RX	Receive data	RX	Receive data (-)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	RX+	Receive data (+)
8	—	Not used	TX+	Transmit data (+)
9	—	Not used	—	Not used

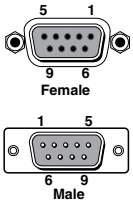
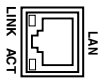


Figure Q-4 — Remote port pin assignments

b. **If desired**, connect a control system or computer to the front panel Configuration (RS-232) port. The optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part #**70-335-01**, can be used for this connection.

Step 7 — LAN (Ethernet) port



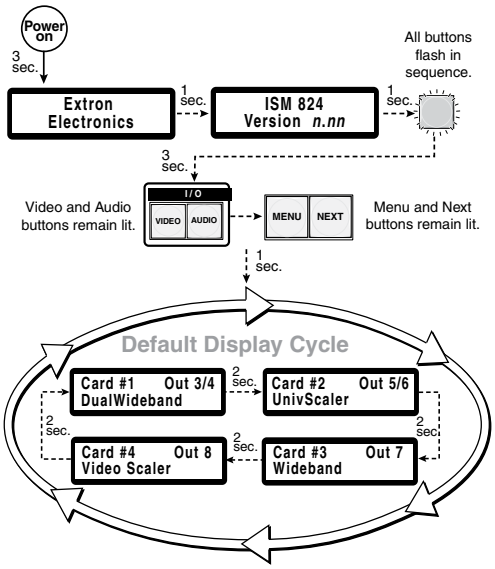
Connect a network WAN or LAN hub, a control system, or a computer to the Ethernet RJ-45 port. See chapter 2, "Installation", for details.

- **Network connection** — Wire as a patch (straight) cable.
- **Computer or control system connection** — Wire the interface cable as a crossover cable.

Step 8 — Power on

Plug the switcher into a grounded AC source. Plug in and power on input and output devices and the ISM 824. All front panel buttons flash in sequence (red, green, and amber). The Video and Audio buttons remain lit (green and red), and the Menu and Next buttons remain lit amber. All other buttons extinguish.

After powering up, the unit enters and displays a default cycle. See chapter 3, "Operation and Setup", "Powering Up" section.



NOTE *The output cards shown in the default display cycle may differ,depending on the type and number of cards installed.*

Figure Q-5 — Initial startup sequence

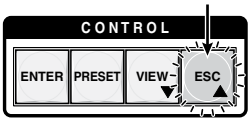
Front Panel Operations

Making input to output ties

To make input ties to untied outputs:

1. Press the Esc button (clears any changes that may be pending).

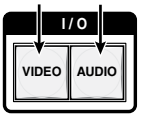
Step 1.
Press the Esc button.



*Esc button flashes **green once***

2. If not already lit, select the video button (lights **green**), audio button (lights **red**), or both.

Step 2.
Press the Video or Audio button or both to toggle on and off.



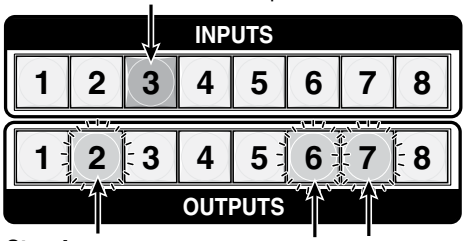
*When selected Video button is lit **green,** Audio button is lit **red***

3. Press (select) the desired input button.
Any existing tied output buttons light (steady - **green for video, red for audio, or amber for both**). The LCD displays the current ties.

4. Press any untied (unlit) output buttons. The output button flashes green red or amber to indicate a tentative tie, and the Enter button flashes **green**.

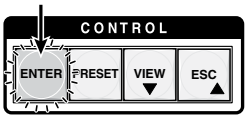
5. Press the Enter button to make the tie. The input, output, and Enter buttons extinguish

Step 3.
Press and release desired Input button



Step 4.
Press and release any desired Outputs.
*The output buttons flash the appropriate color. The **Enter** button flashes **green** to indicate the need to confirm the change.*

Step 5.
Press Enter button.

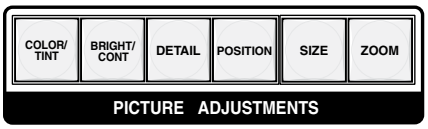


*After pressing **Enter** button all lights extinguish.*

See chapter 3, "Operation and Setup", "Front Panel Operation" section, for information about adding, removing, or replacing ties.

Picture adjustments

The ISM 824 has six buttons for picture adjustment modes (color/tint, brightness/contrast, detail, position, size, and zoom).

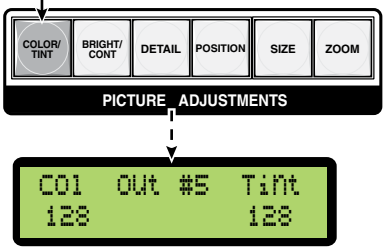


To make picture adjustments do the following:

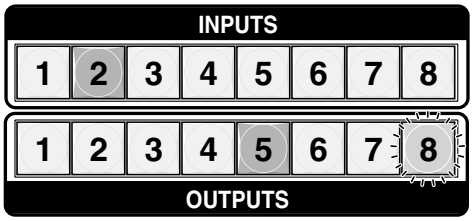
1. Press the Esc button.
2. Press the applicable picture adjustment button (lights amber). Associated output buttons for cards that allow adjustments light steady or flash green. If flashing, press the button to select (lights **green**).

NOTE *Steady lit buttons indicate currently selected outputs, and flashing buttons indicate outputs available for selection.*

Step 2.
Press the Color/Tint button.
The button lights **amber**.

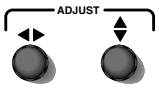


NOTE *The LCD shows the current Color/Tint setting.*



*The applicable output card button (#5) and associated input (#2) light **green**. Applicable available outputs flash **green**.*

Step 3.
Use the encoders to make the adjustment.



3. Use the appropriate encoder to make the desired adjustments.
4. Press the Esc button to exit. The buttons extinguish.

See chapter 3, "Operation and Setup", "Picture adjustments" section, for information about all picture adjustment settings.

Presets

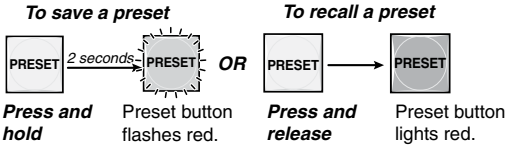
The ISM 824 has a total of sixteen I/O preset memory addresses available that are assigned to the input and output buttons. They can be saved and recalled using the front panel and any current tie configuration can be saved to any one of the preset locations, in any order.

NOTE *Saving the current configuration to an existing preset overwrites that existing preset in favor of the new configuration.*

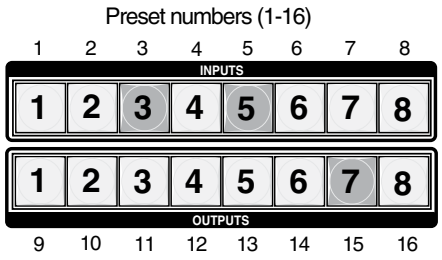
To save or recall a preset, do the following:

1. Press the Esc button.
2. Press and hold (2 seconds for save) or press and release the Preset button (to recall). The Preset button either flashes red (save) or lights red (recall).
3. Select the desired input or output button for the appropriate preset number (1-16) to save to or recall from. That button and the Enter button flash red.

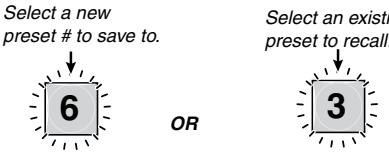
Step 2. Press the Preset button



Step 3. Select desired preset #



Whenever the preset button is pressed, currently saved preset buttons light red (e.g. presets #'s 3, 5,and 15).



Step 4. *Press the flashing Enter button to excute.*

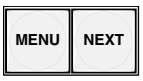
4. Press Enter. All preset buttons and the Enter buttons extinguish. The current configuration is saved to or retrieved from the selected preset location.

See chapter 3, "Operation and Setup", "I/O presets" section, for further information.

Quick Start —
ISM 824 Integration Scaling Multiswitcher, continued

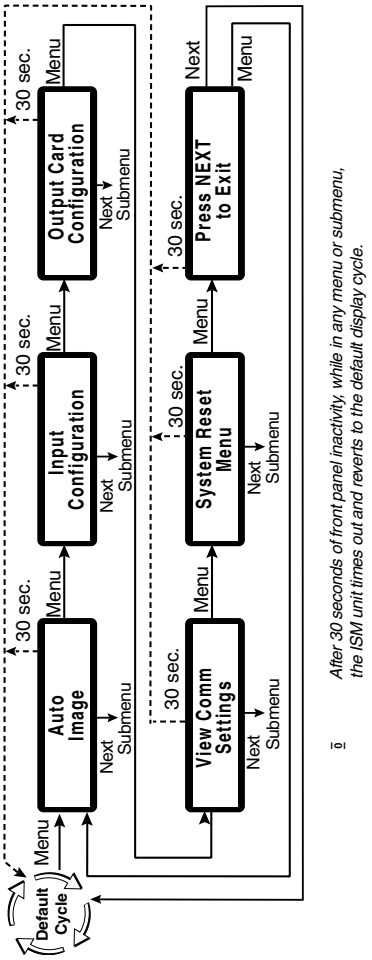
ISM 824 Menu System

The ISM 824 has a six level menu system. Access to each level and sub level is made by using the menu control buttons.



- **Menu button —** The Menu button enters and moves through the main menu system in the ISM.
- **Next button —** The Next button steps through the submenus in the ISM menu system or exits the menu system.

Each level has separate submenus, accessed by pressing the Next button. Within any submenu, pressing the Menu button takes the user back up a sub level.



See chapter 3, "Operation and Setup", "ISM 824 Menu System" section, for complete step-by-step information on configuring the ISM with the Menu System.

Front panel security lockout (Executive mode)

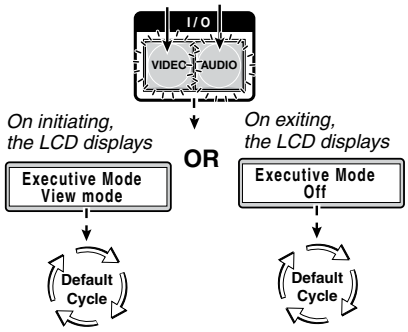
The front panel security lockout limits some or all the operation of the ISM from the front panel. There are two levels of security available via the front panel; Executive modes 1 and 2.

- **Executive Mode 1— View Mode**. Complete front panel lockout except for viewing ties and unlocking View mode. No changes can be made and attempts result in the I/O buttons blinking twice.
- **Executive Mode 2 — I/O ties only.** Partial front panel lockout, allowing ties to be changed, I/O presets recall, button background illumination control, audio gain/attenuation control, and unlocking Executive 2 mode. Attempting other changes result in the I/O buttons and the Enter button blinking twice.

To initiate or exit Executive Mode 1 or 2 follow the steps shown below:

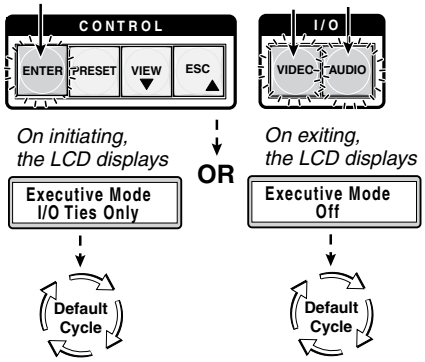
Executive Mode 1

To initiate or exit:
Press and **hold** the Video and Audio buttons (2 seconds), until buttons blink twice. Release.



Executive Mode 2

To initiate or exit:
Press and **hold** Enter, Video, and Audio buttons (2 seconds), until buttons blink twice.



See chapter 3, "Operation and Setup", "Front panel security lockout (Executive mode)" section, for further information.

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Chapter One

Introduction

About this Manual

About the Integration Scaling Multiswitcher

Definitions

Features

Introduction

About this Manual

This manual contains installation, configuration, and operating information for the Extron ISM 824 Integration Scaling Multiswitcher with optional output boards. In this manual, the terms “ISM 824”, the “ISM”, “Integration Scaling Multiswitcher“, “the multiswitcher”, and “switcher“ are used to refer to the ISM 824.

About the Integration Scaling Multiswitcher

The Extron ISM 824 is a modular, eight video and audio input Integration Scaling Multiswitcher with up to eight video and audio outputs. The video outputs comprise of two pass-through outputs and four expansion slots that support a combination of optional output cards. There are five models of output cards:

- **ISM RGB Universal Scaler** — This card scales any low resolution input signal (composite, S-video, or component video) or a high resolution input signal (RGB, or component) to a high resolution signal (RGB or HD-component) output up to 1600 x 1200 and HDTV 1080p. The card is available with RGB/component, DVI, or HD-SDI ouputs.
- **ISM VS Video Scaler** — This card scales any low resolution input (composite, S-video, or component video) to a high resolution (RGB or HD-component) output up to 1400 x 1050 or HDTV 1080p. High resolution inputs are passed through unchanged.
- **ISM SC Scan Converter** — This card converts any high resolution input signal (RGB or HD-component) to a low resolution signal (composite, S-video or component) output. In addition this output card supports genlocking of any converted signal to an external sync source.
- **ISM 1WB Single Output Wideband** — This card takes any input signal type and passes it through unprocessed.

NOTE *The Universal Scaler, Video Scaler, Scan Converter, and Single Wideband cards can be installed in any of the four output slot.*

- **ISM 2WB Dual Output Wideband** — This card takes any input signal type and passes it through unprocessed on the corresponding pins of either of two 15-pin HD connectors. This card can only be used fully in the first two slots where dual outputs are supported.

NOTE *When it is installed in slot #1, the top HD connector is output 3 and the bottom is output 4.*

When it is installed in slot #2 the top HD connector becomes output 5 and the bottom is output 6.

The multiswitcher accepts up to eight video inputs of various resolutions on five female BNC connectors per input. Depending on the output card configurations, the multiswitcher scales, down-converts, or simply passes the video inputs to output RGB or YUV video. The outputs are made on five female BNC connectors, or two 15-pin HD connectors (dual wideband card only). Inputs and outputs are made in the following signal formats:

- RGB (RGBHV, RGBS) video
- YUV-HD (HDTV) video
- Progressive YUV component video
- Interlaced YUV component video
- S-video (Y/C)
- Composite (NTSC, PAL, SECAM) video

Each video input is individually configurable for color, tint, brightness, contrast, detail, position, size, and zoom via the front panel, RS-232/RS-422, or Ethernet control. The ISM also allows the various high-resolution and low resolution video formats to be displayed on a device with a fixed resolution and aspect ratio, such as a liquid crystal display (LCD) projector, a digital light processor (DLP) projector, a plasma display, or, optionally, a DVI or HD-SDI device.

Figure 1-1 shows an example of an ISM 824 application.

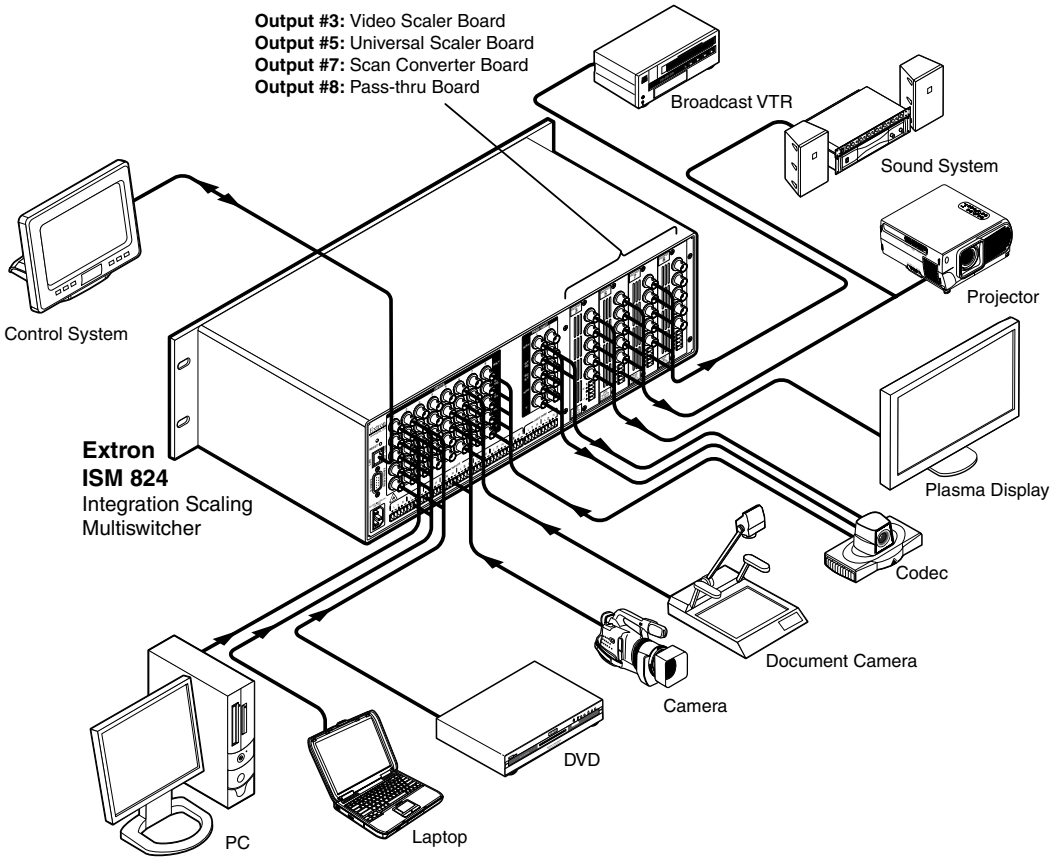


Figure 1-1 — Typical ISM 824 application

Balanced or unbalanced stereo or mono audio inputs are made on eight 5-pole captive screw connectors, numbered 1 through 8.

Individual audio input gain and attenuation can be displayed and adjusted from -18 dB to +24 dB via the front panel, Ethernet, or RS-232/RS-422 control.

Output volume can be displayed and adjusted as desired through a range of 0 to 64 dB, in 1 dB steps via the front panel, Ethernet or RS-232/RS-422 control.

In addition, all audio settings can be set to the same desired input and output setting via the Windows Control Program. Both input gain and output volume adjustments are available at the front panel, by RS-232/RS-422 control, or Ethernet connection.

Serial control of the switcher by RS-232/RS-422 is achieved by connecting a host device such as a PC or control system to the rear panel 9-pin D connector, or the 2.5 mm mini stereo jack on the front panel (only RS-232 control). This allows the user to control and configure the multiswitcher using Extron SIS™ commands or the ISM 824 Windows Control Program. See chapter 4, "SIS™ Programming and Control", and chapter 5, "ISM 824 Software", for details.

An Ethernet connection is made using the RJ-45 connector on the rear panel.

The ISM 824 features HDTV 480p, 576p, 720p, 1080i, and 1080p outputs.

The switcher has 16 user defined presets, allowing the user to save the current video and audio tie (input x to output x) as an I/O preset to any one of 16 preset memory addresses via the front panel. Presets 1 through 8 are assigned to the input buttons, and 9 through 16 are assigned to the output buttons. See chapter 3, "Operation and Setup", for details.

The switcher is housed in a rack-mountable, 3U high, 17.5" wide, metal enclosure and uses an external 100 VAC to 240 VAC, 50/60 Hz, 65 watt power supply.

Definitions

The following terms are used throughout this manual:

Tie — An input-to-output connection.

Set of ties — An input **tied** to two or more outputs. An output can never be tied to more than one input.

Configuration — One or more **ties** or one or more **sets of ties**.

Current configuration — The **configuration** that is currently active in the switcher (also called **configuration 0**)

Global memory (I/O) preset — A **configuration** that has been stored. Up to 16 **global memory presets** can be stored in memory. Preset locations are assigned to the input buttons and output buttons. All presets can be selected from the front panel, or by serial port or Ethernet control, for either saving or retrieving. When a **preset** is retrieved from memory, it becomes the **current configuration**.

Features

Inputs —

Video inputs — The ISM switches among eight configurable RGB, HDTV component video, component video, S-video, and composite video inputs.

Audio inputs — The ISM switches among eight balanced or unbalanced stereo or mono audio inputs on 5-pole captive screw connectors.

Outputs —

Standard pass through video outputs — The ISM 824 outputs any video signals, unprocessed, on outputs 1 and 2.

Optional output cards — With optional scaler, scan converter, dual or single wideband output cards installed in the expansion slots, up to six additional program video outputs are available. The output signals are scaled, converted or passed through, based on the card type installed:

- **ISM RGB Universal Scaler** — Scales any low or high resolution input signal to a high resolution signal up to 1600 x 1200 or HDTV 1080p.
- **ISM VS Video Scaler** — Scales any low resolution input output up to 1400 x 1050 or HDTV 1080p. High resolution inputs pass through unchanged.
- **ISM SC Scan Converter** — Converts any high resolution input signal to a low resolution signal. Genlocking of any converted signal to an external sync source is available with this output card.
- **ISM 2WB Dual output wideband** — This optional card takes any two input signals and passes them through unprocessed on two 15-pin HD connectors.
- **ISM 1WB Single output wideband** — This optional card takes any input signal type and passes it through unprocessed on BNC connectors.

Audio outputs — The ISM outputs the selected unamplified, line level, balanced or unbalanced stereo or mono audio on 5-pole captive screw connectors.

3:2 pulldown detection for NTSC and 2:2 film detection for PAL video sources — These advanced film mode processing features help maximize image detail and sharpness for video sources that originated from film. When film is converted to NTSC video, the film frame rate has to be matched to the video frame rate in a process called 3:2 pulldown. Jaggies and other image artifacts can result if conventional de-interlacing techniques are used on film-source video. The ISM's advanced film mode processing recognizes signals that originated from film. The ISM then applies video processing algorithms that optimize the conversion of video that was made with the 3:2 pulldown process. This results in richly detailed images with sharply defined lines.

A similar 2:2 pulldown process is used for PAL film-source video.

Switching flexibility — Provides individually buffered, independent matrix switched outputs with audio follow and audio breakaway for audio models.

- **Tie any input to any or all outputs**
- **Quick multiple tie —** Multiple inputs can be switched to multiple outputs simultaneously. This allows all displays (outputs) to change from source to source at the same time.
- **Audio follow —** Audio can be switched with its corresponding video input via front panel control or under Ethernet or RS-232/RS-422 remote control.
- **Audio breakaway —** Audio can be broken away from its corresponding video signal. This feature allows any audio signal to be selected with any video signal simultaneously to one or all outputs in any combination. Audio breakaway switching can be done via front panel control or under Ethernet or RS-232/RS-422 remote control.

Audio gain/attenuation — Users can set the input level of audio gain or attenuation (-18 dB to +24 dB) via the RS-232/RS-422 or Ethernet link, or from the front panel. Individual input audio levels can be adjusted so there are no noticeable volume differences between sources.

LAN port — Supports connection to an Ethernet LAN so that the switcher can be accessed and operated anywhere in the world from a computer running a standard Internet browser.

Quad-standard video decoder — The switcher uses a digital comb filter that can decode NTSC 3.58, NTSC 4.43, PAL, and SECAM signals.

Triple-Action Switching™ (RGB delay) — RGB delay mutes the R, G, and B video planes to blank the screen while the scaler locks to the new sync, so that a noise-filled scramble is not shown on the monitor during the transition. The time delay between the RGB and sync signals is user adjustable up to 5 seconds under front panel, SIS, and program control.

Rack mountable — The 3U high switcher can be mounted in any conventional 19" wide rack.

Optional Output Card Features

The series of optional output cards have the following features available.

Universal Scaler card (ISM RGB)

Auto Image™ — Only for scaled outputs. The auto imaging feature automatically sizes and centers the selected input to fill the screen. Auto imaging can be selected for individual outputs as desired.

Test patterns — This card features built-in test patterns to aid in monitor or projector setup and evaluation. The test patterns available are:

- 8 color split
- 4:3/16:9 hatch
- 4x4 crosshatch
- gray
- ramp
- alternating pixels
- crop
- aspect ratios; 1.33, 1.78, 1.85, and 2.35.

Blue mode — The switcher can be set to output the sync and blue video signal only, to help installers calibrate the monitor or projector.

Film mode — Advanced film mode processing techniques maximize image detail and sharpness for NTSC and PAL sources that originated from film.

Auto memories — Only for scaled outputs. The inputs support 16 auto-recall memories each, based on the incoming frequency. Information on sizing, centering, detail, contrast, and brightness is saved.

Aspect ratios conversion — Any input can be adjusted horizontally and vertically to meet a specific aspect ratio requirement.

Input presets — Only for scaled outputs. The ISM 824 has memory for up to 128 presets that allow the user to use SIS commands to save and recall input type and sampling, color, tint, contrast, brightness, centering, sizing, and filtering information.

User presets — Only for scaled outputs. Three presets for each input save different settings for color, tint, contrast, brightness, detail, size, centering, and input configurations.

Freeze mode — Only for scaled outputs. Locks the output display to the selected image. Once the display is frozen, you can remove an input without losing the output image. This feature lets the ISM function as a still store.

RGB pass-through — RGB signals can be passed unprocessed when this feature is set to on.

Video Scaler card (ISM VS)

Auto Image™ — Only for scaled outputs The auto imaging feature automatically sizes and centers the selected input to fill the screen. Auto imaging can be selected for individual outputs as desired.

Top and bottom blanking — Top and bottom blanking lines can be adjusted to eliminate artifacts such as unwanted header and footers or VCR noise.

Edge smoothing filter — This feature reduces or eliminates anti-aliasing (jail-bar effect) and high frequency noise for digital displays.

Blue mode — The switcher can be set to output the sync and blue video signal only, to help installers calibrate the monitor or projector.

2:2 pulldown — The 2:2 pulldown detection feature is user controllable, and is used where the input source is PAL video originating on film.

Enhanced mode — Automatic gain control of the video signal is enabled when this feature is set to on.

Auto memories — Only for scaled outputs. The inputs support 16 auto-recall memories each, based on the incoming frequency. Information on sizing, centering, detail, contrast, and brightness is saved.

Input presets — Only for scaled outputs. The ISM 824 has memory for up to 128 presets that allow the user to use SIS commands to save and recall input type and sampling, color, tint, contrast, brightness, centering, sizing, and filtering information.

User presets — Only for scaled outputs. Three presets for each input save different settings for color, tint, contrast, brightness, detail, size, centering, and input configurations.

Dual Output Wideband card (ISM 2WB)

This card takes any two input signals and passes them through unprocessed on two 15-pin HD connectors.

Single Output Wideband card (ISM 1WB)

This card takes any input signal type and passes it through, unprocessed.

Chapter Two

Installation

U/L Safety Requirements

Mounting the Switcher

Rear Panel Features and Connection

Installation

UL/Safety Requirements

The Underwriters Laboratories (UL) requirements listed below pertain to the safe installation and operation of this Integration Scaling Multiswitcher.

Important safety instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Mounting the Switcher

If the ISM 824 is to be rack mounted, it is important to mount it before cabling it. Four uninstalled rubber feet are included with the ISM 824. Install the feet only if the unit is to be mounted on a table top (see "Tabletop placement" below).

Tabletop placement

For tabletop placement, install the self-adhesive rubber feet/pads (provided) onto the four corners of the bottom of the device.

UL requirements for rack mounted devices

The following Underwriters Laboratories (UL) requirements pertain to the safe installation of the ISM 824 in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the ISM 824 in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Rack mounting

To rack mount the ISM 824, use two screws on each end of the switcher to attach the switcher to the rack (see figure 2-1).

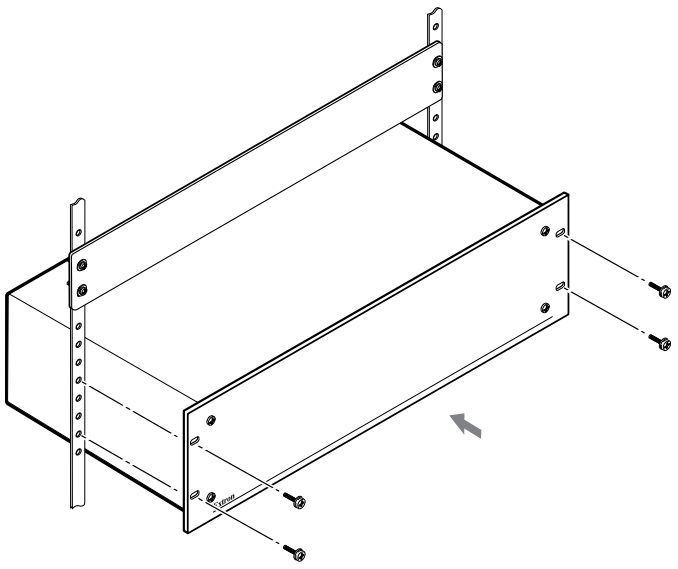


Figure 2-1 — Mounting the ISM 824 Multiswitcher

Rear Panel Features and Connection

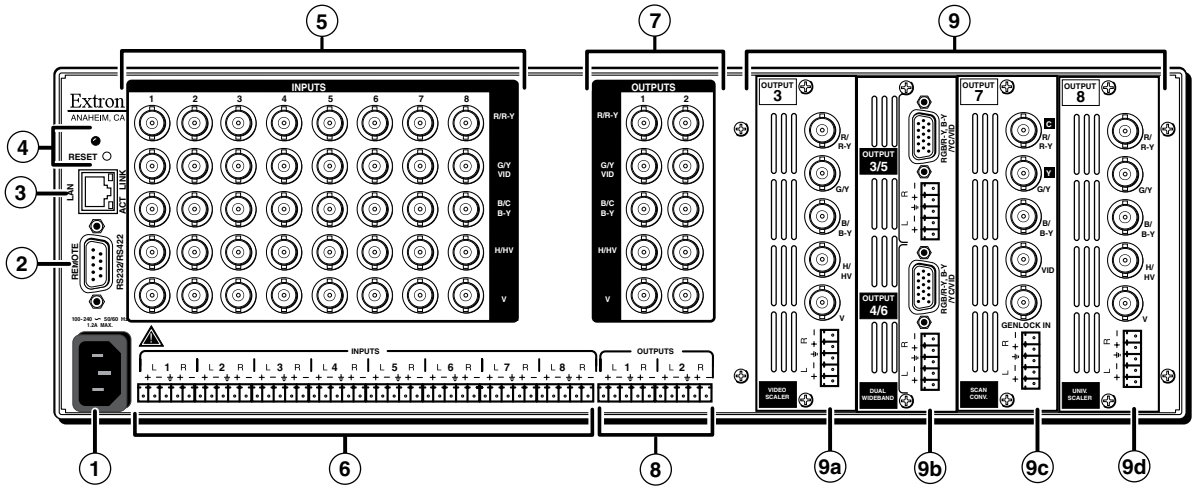


Figure 2-2 — ISM 824 rear panel features

Power and control connections

1 **AC power connector —** Plug a standard IEC power cord into this connector to connect the multiswitcher to a 100 to 240 VAC, 50 Hz or 60 Hz power source.

2 **Remote port —** Connect a host device, such as a computer or touch panel control, to the ISM 824 via this 9-pin D connector for serial RS-232 or RS-422 control.

Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	TX	Transmit data	TX	Transmit data (-)
3	RX	Receive data	RX	Receive data (-)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	RX+	Receive data (+)
8	—	Not used	TX+	Transmit data (+)
9	—	Not used	—	Not used

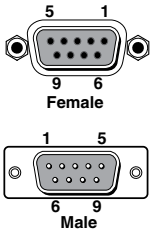
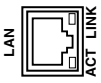


Figure 2-3 — Remote port pin assignments

NOTE *See chapter 4, "SIS™ Programming and Control", for definitions of the SIS commands and chapter 5, "ISM 824 Multiswitcher Software" to install and use the control software.*

3 **LAN Ethernet port —** Connect the switcher to an Ethernet LAN or WAN via this RJ-45 connector. Ethernet control allows the operator to control the switcher from a remote location. When connected to an Ethernet LAN or WAN, the switcher can be accessed and operated from a computer running a standard Internet browser.



Ethernet connection indicators — The LEDs marked "Link" and "Act" indicate the status of the Ethernet connection. The Link LED lights green when the ISM is properly connected to an Ethernet LAN, and the Act LED flickers amber to indicate transmission of data on the RJ-45 connector as the devices communicate.

NOTE *Do not use standard telephone cables. Telephone cables will not support Ethernet or Fast Ethernet.*

Do not stretch or bend cables. Transmission errors can occur.

Cabling and RJ-45 connector wiring

It is vital that the Ethernet cables used be the correct type of cable, and that they be properly terminated with the correct pinout.

Choosing a network cable

Ethernet links use Category (CAT) 3, 4, 5, 5e, or 6, unshielded twisted pair (UTP) or shielded twisted pair (STP) cables, terminated with RJ-45 connectors. Ethernet cables are limited to 328' (100 m)

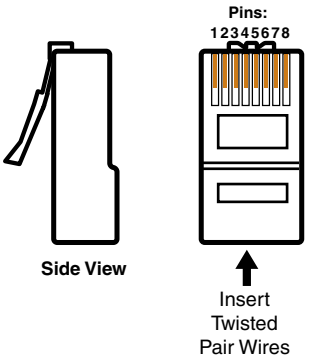
The cable used depends on the network speed. The ISM supports both 10 Mbps (10Base-T — Ethernet) and 100 Mbps (100Base-T — Fast Ethernet), half-duplex and full-duplex, Ethernet connections.

- 10Base-T Ethernet requires, at a minimum, CAT 3 UTP or STP cable.
- 100Base-T Fast Ethernet requires, at a minimum, CAT 5 UTP or STP cable.

Terminating the network cable

The cable can be terminated as either a patch cable or a crossover cable (figure 2-4) and must be properly terminated relevant to the application:

- **Patch (straight) cable** — Connection of the ISM to an Ethernet hub, router, or switcher that also hosts a controlling computer.
- **Crossover cable** — Direct connection between the ISM and a controlling computer.



Straight-through Cable
(for connection to a switch, hub, or router)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

Crossover Cable
(for direct connection to a PC)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

Figure 2-4 — RJ-45 connector pinout tables

④ **Reset button and LED** — Pressing this recessed button causes certain IP functions and Ethernet connection settings to be reset to the factory defaults. The green LED above the button blinks a varying number of times to indicate which reset mode has been entered. See chapter 3, "Operation and Setup" , "Resetting the unit with the reset button" section, for information on reset modes.

RESET

Input connections

There are video and audio connectors for eight inputs.

⑤ **Video input connectors —** Connect computer or RGB video, component video, S-video, or composite video to any of the eight sets of 5 female BNC connectors. See figure 2-5 for the relevant connector positions used in each video format.

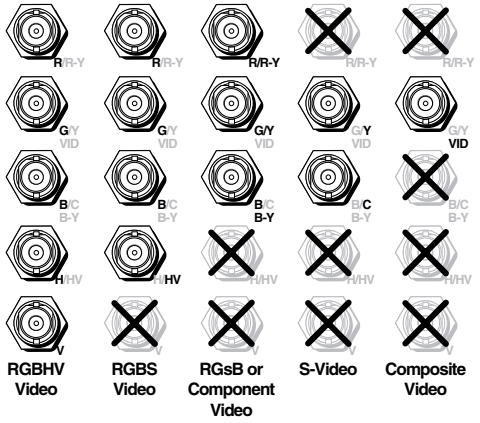


Figure 2-5 — Input connections for various video formats

⑥ **Audio input connectors —** Connect balanced or unbalanced stereo or mono audio to any of the eight sets of 3.5 mm, 5-pole captive screw connectors. Wire the connector for the appropriate input type, as shown in figure 2-6. See chapter 3, "Operation and Setup", for details about setting up the audio.

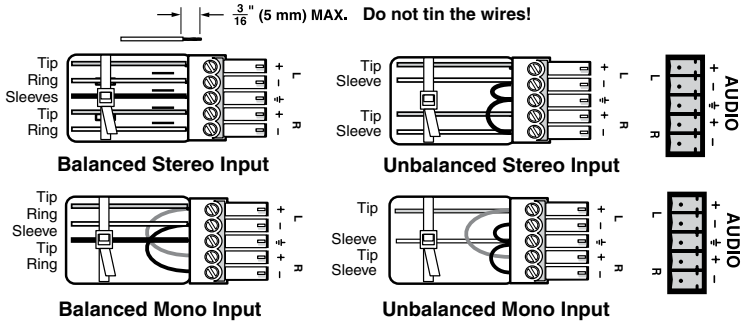


Figure 2-6 — Captive screw connector wiring for audio inputs

NOTE *When making connections for the ISM 824 switcher from existing audio cables, see figure 2-7. A mono audio connector consists of the tip and sleeve, whereas a stereo audio connector consists of the tip, ring and sleeve. The tip, ring, and sleeve wires are also shown above on the captive screw audio connector diagram (balanced inputs), figure 2-6, and on figure 2-9.*

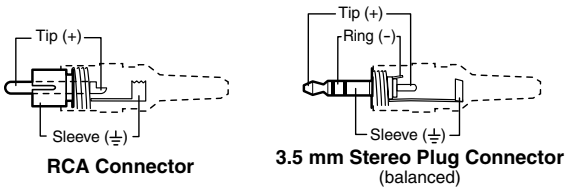


Figure 2-7 — Phono audio connectors

Output connections

The basic device has video and audio connectors for two pass-through outputs. With four optional cards installed, there are video and audio connectors for up to eight outputs.

NOTE *The number of outputs is dependent on the number and types of cards installed.*

⑦ **Pass-through video output BNC connectors —** Connect RGB video displays to these two sets of female BNC connectors for unprocessed pass-through signals (RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video, S-video, or composite video). See figure 2-8 for the relevant connector positions used in each video format.

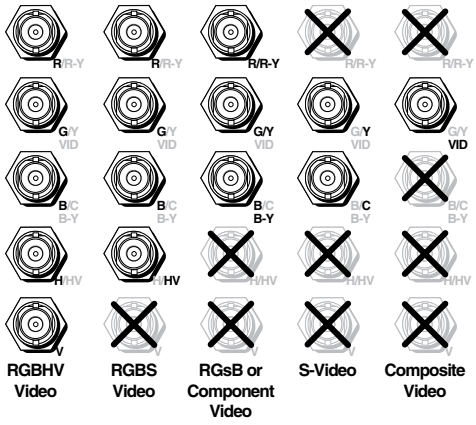


Figure 2-8 — BNC output connections for outputs 1 and 2

⑧ **Audio output connectors —** Connect audio devices, such as an audio amplifier or powered speakers to these two 3.5 mm, 5-pole captive screw connectors. The connectors output the selected unamplified, line level audio. See figure 2-9 to properly wire an output connector.

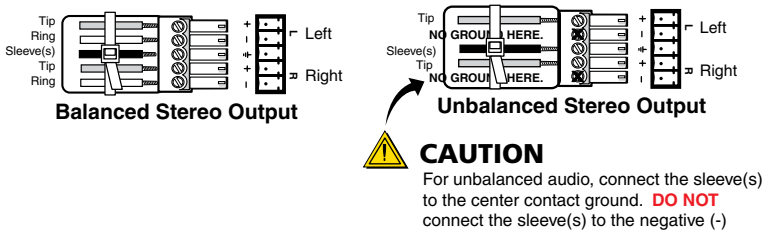


Figure 2-9 — Captive screw connector wiring for audio output

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

By default, the audio output follows the video switch. Audio breakaway, commanded via the front panel, the Ethernet link, or the RS-232/RS-422 link, allows selection from any one of the audio input sources.
See chapter 3, "Operation and Setup", chapter 4, "SIS™ Programming and Control", chapter 5, "ISM 824 Multiswitcher Software", and chapter 6, "HTML Operation", for details.

Optional output card connections

Video output connections

(9) There are different output card options available, for the four expansion slots at the rear of the ISM 824. Figure 2-2 shows the following four:

(9a) **ISM VS Video scaler card —** Connect RGB video displays to this set of 5 female BNC connectors to output scaled or unprocessed signals (RGBHV, RGBS, RGsB, or HD component (YUV) video).

(9b) **ISM 2WB Dual wideband card —** Connect RGB video, component/ HDTV video, S-Video, or composite video displays, as applicable, or other devices to these 15-pin HD connectors for each output.

NOTE *For the installation configuration shown in figure 2-2, the top 15-HD pin connector is output 5, and the lower 15-pin HD connector is output 6.*

(9c) **ISM SC Scan Converter card —** Connect video displays to this set of 3 female BNC connectors to simultaneously output converted (downscaled) signals (RGsB, component video, S-video, or composite video) and a composite video on a single BNC connector. Also an external blackburst signal may be connected to the input (Genlock In) BNC connector for genlocking the video signal in broadcast or other sync critical applications.

(9d) **ISM RGB Universal Scaler card —** Connect RGB video displays to this set of 5 female BNC connectors to output scaled signals (RGBHV, RGBS, RGsB, or HD component (YUV) video).

The fifth optional output card type is:

ISM 1WB Single wideband card — Connect an RGB video, component/ HDTV video, S-Video, or composite video display to this set of 5 female BNC connectors to output unprocessed video signals.

Audio output connections

Audio output connectors — Connect audio devices, such as an audio amplifier or powered speakers to the 3.5 mm, 5-pole captive screw connectors on the card. The connectors output the selected unamplified line level audio. See figure 2-10 to properly wire an output connector.

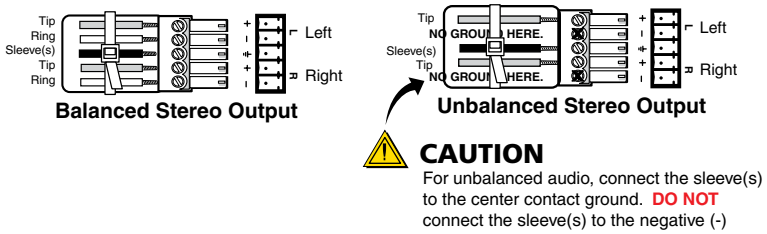


Figure 2-10 — Captive screw connector wiring for audio output

Installing the optional output cards

If the optional cards are already installed in the ISM 824, connect suitable display devices and configure the input and outputs as applicable. See chapter 3, "Operation and Setup", for front panel operation. Also see chapter 4, "SIS™ Programming and Control", chapter 5, "ISM 824 Multiswitcher Software", and chapter 6, "HTML Operation", for alternative methods in configuring the multiswitcher.

If the cards are not pre-installed, install the card following the steps below:

1. Turn off the ISM 824, and remove the power cord. Repeat for all connected devices.
2. Remove the blank from the rear output port where the card is to be inserted. To do this, loosen and remove the two retaining screws (top and bottom), and lift the blank away.

NOTE *Re-use the screws to secure the new output card in place. Retain the blanks for future use.*

Before installing Dual output wideband cards, refer to chapter 1, "Introduction", page 1-2, for information on output port configuration for that specific card type.

3. Remove the card from its outer box and, holding the cards by the rear frame or BNC connectors, remove the card from the anti-ESD bag, taking care not to touch any of the components on the board.
4. With the card upright, align the front (non connector end) of the card with the top and bottom plastic guides in the ISM 824 (see figure 2-11). Slide the card in carefully, ensuring that it remains within the guides, and push it home firmly.

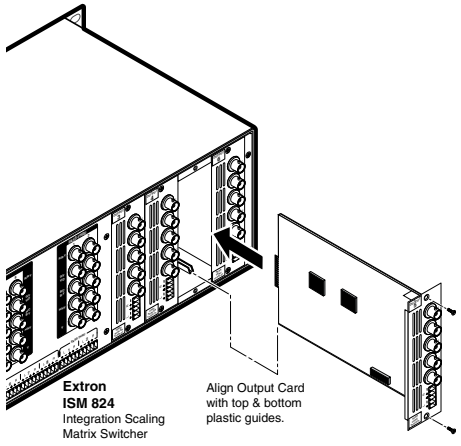


Figure 2-11 — Optional output card installation

5. Using the two screws retained from removing the blank, secure the card in place.
6. If applicable, repeat for any other output cards.
7. Connect and power up the ISM 824. If the card has been installed correctly, the device recognizes the new output card, and the LCD displays the card number, type, and output number, and a 30 second countdown timer. The given output number is used to tie inputs .

NOTE *If a Universal Scaler card (ISM RGB) is installed, during power up a color bar test briefly appears on the display device and remains visible for 30 seconds.*

NOTE *If the device does not recognize a newly installed card, power the unit down, remove the card and re-install, closely following steps* ***4*** *through* ***7*** *above.*

If it continues to not recognize the card, contact Extron HelpLine (see rear cover).

8. Connect output devices to the video and audio connectors on the rear of the newly installed cards and power up the devices.
9. Power up the input devices and create the desired ties, following the steps given in chapter 3, "Operation and Setup".
10. Configure the ISM 824 with the new cards, following the steps given in chapter 3, "Operation and Setup". Also see chapter 4, "SIS Programming and Control", chapter 5, "ISM 824 Multiswitcher Software", and chapter 6, "HTML Operation", for alternative methods in configuring the multiswitcher.

3

Chapter Three

Operation and Setup

Front Panel Features

Powering Up

Front Panel Operation

ISM 824 Menu System

Resetting the Unit with the Reset Button

Front Panel Features

All of the ISM 824's controls and indicators are on the front panel (figure 3-1). Input and output selection buttons are located on the left, with control and adjustment buttons, encoders, and an LCD screen towards the right. A 2.5 mm configuration port is located to the left of the picture adjustment buttons.

All buttons are backlit (green, red, or amber) and can be relabeled as desired. See Chapter 5, "Replacing the button labels" section.

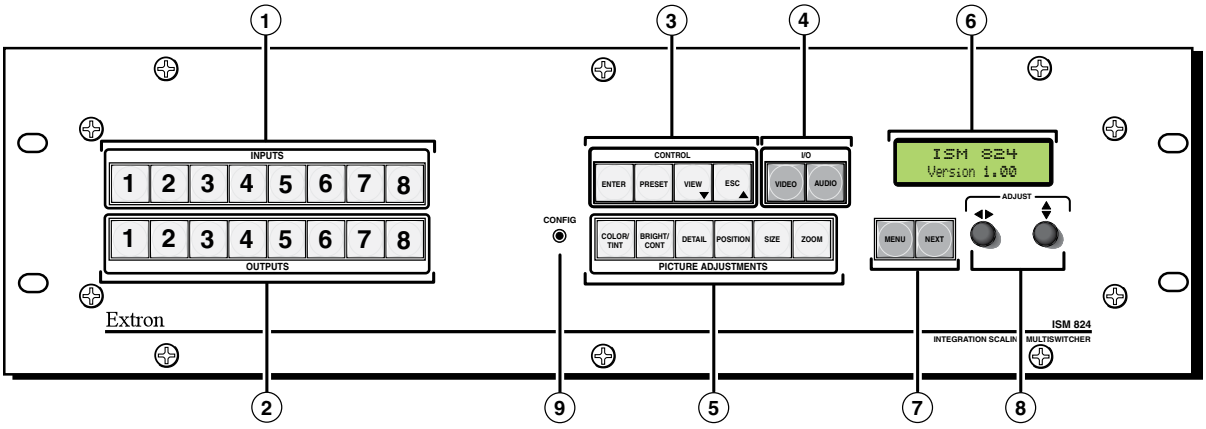


Figure 3-1 — ISM 824 Integration Scaling Multiswitcher front panel features

Input and output buttons

① **Input selection buttons —** The Input 1 through Input 8 buttons select and identify the associated input to tie to any selected output(s)

When an input button is lit green, it indicates a video input selection. When it is lit red it indicates an audio input selection, and when lit amber the input selection is both video and audio. Inputs can be tied to any output, as video, audio, or both. See the " Front Panel Operation", "Making input to output ties" section later in this chapter for the method.

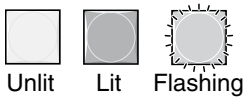
Input buttons are also used to save and recall presets (1 to 8). See the "Front Panel Operation", "Saving a preset" and "Recalling a preset" sections later in this chapter for the method.

② **Output selection buttons —** The output buttons 1 through 8 select the output to tie any selected active input, and for identifying any existing ties (video, audio, or both) active on that selected output. See the "Front Panel Operation", "Viewing ties" section later in this chapter for the method.

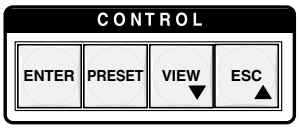
When an output button is lit green, it indicates a video output is selected. If the button is lit red it indicates an audio output selection. If the button is lit amber, then both video and audio outputs are indicated. Outputs can be tied to any input, as video, audio, or both. See the " Front Panel Operation", "Making input to output ties" section later in this chapter for method.

Output buttons are also used to save and recall presets (9 to 16). See the "Front Panel Operation", "Saving a preset" and "Recalling a preset" sections later in this chapter for method.

NOTE *Throughout this manual the front panel buttons status (unlit, lit, or flashing) is shown as:*



Control buttons



③ **Control selection buttons —** These four buttons give direct access to enter (save), presets, views, and esc (exit) controls.

Enter button — The Enter button flashes green when a change to an input or output tie is pending, or red when a preset recall is pending. Pressing the flashing button saves the change or recalls the preset, and the Enter button and any lit input and output buttons are extinguished. See the "Front Panel Operation", "Making input to output ties" section later in this chapter for Enter button use.

Preset button — The Preset button gives access to recall or save up to 16 input/output presets. The button lights red when pressed. Upon recall or saving the preset, the button and all input and output buttons (lit red) are extinguished. Presets 1 through 8 are assigned to the input buttons, and 9 through 16 are assigned to the output buttons. See the "Front Panel Operation", "Saving a preset" and "Recalling a preset" sections in this chapter.

NOTE *Input and output presets are separate to the memory presets that are used for sizing and centering.*

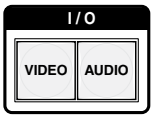
View (▼) button — This button, when pressed and released, lights red and allows quick viewing of existing input and output ties on the LCD screen (see figure 3-2). When used in conjunction with the video and audio buttons (④), output buttons with no existing ties are lit.

NOTE *This button also used to decrease settings for the following modes: RGB delay, input audio level, and output audio volume.*

Esc (▲) button — This button, when pressed, flashes green once, all lit control, input, and output buttons are extinguished. Any pending changes or adjustments are exited, and the LCD screen reverts to the default display. See the "Default display cycle" section, later in this chapter for details.

NOTE *This button also used to increase settings for the following modes: RGB delay, input audio level, and output audio volume.*

I/O controls



④ **I/O control selection buttons —** These two buttons light on startup, and allow the selection of video, audio, or both when making or viewing input to output ties. See "Front Panel Operation", "Making input to output ties" and "Viewing ties" sections in this chapter.

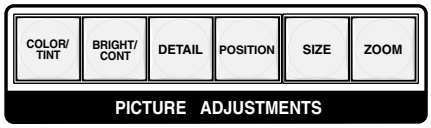
Video button — This button lights green upon start-up and when selected (active). Pressing the lit Video button deselects it. The button extinguishing, along with any lit input or output buttons.

Audio button — This button lights red upon start-up and when selected (active). Pressing the lit Audio button deselects it. The button extinguishing, along with any lit input or output buttons.

When both Video and Audio buttons are active (lit green and red), and any subsequent input buttons are pressed, the existing video ties (green), audio ties (red) and video/audio ties (amber) for those button are indicated. Pressing either I/O button extinguishes them along with any associated lit input and output buttons.

NOTE *If after 30 seconds, no front panel buttons have been pressed and no encoders turned, the input and output buttons extinguish, and the device reverts to the default display cycle.*

Picture adjustment controls



⑤ **Picture adjustment control buttons —** These six buttons give direct access to color/tint, brightness/contrast, detail, position, size, and zoom adjustment control. See the "Front Panel Operation", "Picture adjustments" section later in this chapter for method of use.

NOTE *Picture adjustments are not available for pass-through outputs.*

Color/tint button — Color and tint adjustments for an output can be accessed by pressing this button and turning the encoders. The button lights amber during use.

Bright/cont button — Brightness and contrast adjustments for an output can be made after pressing this button. The button lights amber.

Detail button — This button gives access to adjusting the detail for an output. The button lights amber.

Position button — Pressing this button allows horizontal and vertical position adjustments to be made to the display of an output. This button lights amber.

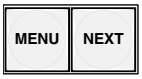
Size button — This button, when pressed, allows size (independent horizontal and vertical) adjustments to be made to the display of an output. This button lights amber.

Zoom button — This button, when pressed, allows horizontal and vertical zoom adjustments to be made to an output display. This button lights amber.

LCD screen

⑥ This 2 x16 high LCD screen displays two rows of menu, control response, and configuration text.

Menu access buttons

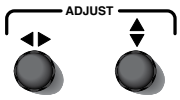


⑦ These two buttons give access to menu commands. See the "ISM 824 Menu System" section, in this chapter.

Menu button — This button, always lit amber, gives direct access to a series of five menus.

Next button — This button, always lit amber, allows page changes within each one of the five menus, and to exit the menu cycle.

Rotary adjustment encoders

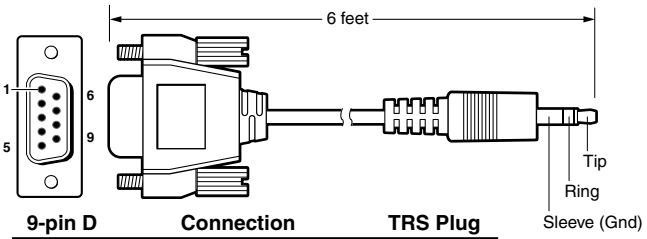


⑧ These two rotary encoders make horizontal (◀▶) and vertical (▲▼) adjustments when using any of the picture adjustment buttons. They are also used during some menu command selection. See the "Front Panel operation", "Picture adjustments", and "ISM 824 Menu System" sections, for details of these encoders.

Front panel configuration port

⑨ **Configuration port** — This 2.5 mm port (jack) can be used to configure the ISM 824 during setup via RS-232, and has an independent protocol from the primary RS-232 port on the rear panel. Use the 2.5 mm configuration cable, part # **70-335-01** (see figure 3-2) for connection to your PC's serial port.

RS-232 protocol (default values):
• 9600 baud • 1 stop bit • no parity • 8 data bits • no flow control



9-pin D	Connection	TRS Plug
Pin 2	Computer's RX line	Tip
Pin 3	Computer's TX line	Ring
Pin 5	Computer's signal ground	Sleeve

Figure 3-2 — Front 2.5 mm port configuration cable, part #70-335-01

Powering Up

When applying power to the ISM 824, the unit undergoes a start-up self testing sequence as follows:

- The LCD screen lights, and displays "Extron Electronics" for 1 second.
- The LCD displays "ISM 824 Version 1.00".
- All buttons light red, then green, then amber, and then extinguish, leaving the Video button lit **green,** the Audio button lit **red**, and the Menu and Next buttons both lit amber.

NOTE *If a Universal Scaler card (ISM RGB) is installed, during power up a color bar test briefly appears on the display device.*

- The LCD begins the default display cycle.

NOTE *The complete sequence above is also made when the unit is restarted after firmware uploads. If the unit is reset via the front panel, the sequence starts at the default display cycle.*

Default display cycle

When in use and not in any menu mode, the LCD screen defaults to cycling through the output configuration currently installed. The displayed content may vary from installation to installation, depending on the installed output card configuration. See figure 3-3 for a typical default display cycle.

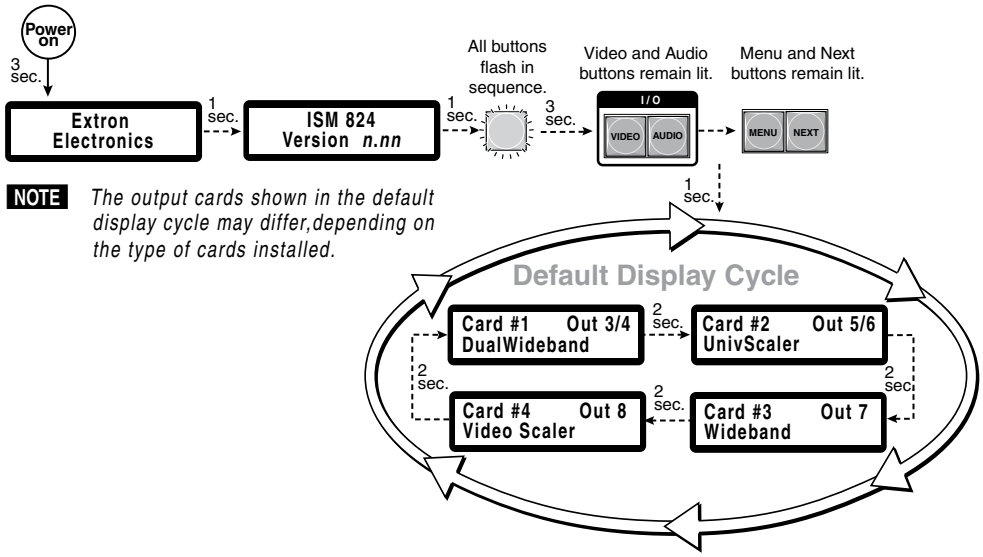


Figure 3-3 — Typical default display cycle

Front Panel Operation

To enable any selected input signal to be viewed on a display device, the input must be tied to an output. Any input can be tied to any output.

NOTE *Ties can be made by front panel operation, RS-232, or through Telnet/HTTP or with the ISM 824 Windows Control Program.*
See chapter 4, "SIS™ Programming and Control", for RS-232/RS-422 methods, chapter 5, "ISM 824 Multiswitcher Software" for WCP methods, and chapter 6 , "HTML Operation" for HTTP methods.

Making input to output ties

To tie an input to any untied outputs do the following;

1. Press the Esc button, to clear any input, output, or control button changes that may be pending.
2. If not already lit, select the Video button (lights **green**), Audio button (lights **red**), or both for the desired tie configuration.
3. Press (select) the desired input. Any existing ties light up (steady), as shown in the table below.
4. Press any untied (unlit) output(s). The output button flashes the appropriate color (**green**, **red**, or **amber**) to indicate a tentative tie, and the Enter button flashes **green**.

I/O control button(s) active (color steady)	Input button color (steady)	Existing tie – output button(s) color (steady)	Tentative tie - output button(s) color (flashing)
Video only (green)	green (video only)	green (video only)	Green (video only)
Audio only (red)	red (audio only)	red (audio only)	Red (audio)
Video and Audio (green and red)	amber (video and audio)	amber (video and audio), green (video only), or red (audio only)	Amber (video and audio)

5. Press the Enter button to make the tie. The input, output, and Enter buttons extinguish.

NOTE *The output buttons and the Enter button flashes for 30 seconds and then extinguishes. The Enter button must be pressed before it becomes unlit. If it extinguishes before being pressed, repeat steps **3** and **4**.*

Only one video input and one audio input can be tied to an output.

If an input with no existing tie is selected, only that input's button lights when pressed. No output buttons light.

As each input and output is selected, the associated output button flashes the appropriate color to indicate a tentative tie. Buttons for output(s) that were already tied to the input light the appropriate color (steady). Outputs that are already tied should be left on if that tie is desired, along with any new (flashing) selections.

If a tie is made between an input and an output, and the selected output was previously tied to another input, the older tie is broken in favor of the newer tie when the Enter button is pressed.

If any associated lit output button (an existing tie) is toggled off by pressing the button and the Enter is pressed, the existing tie to that output is lost.

Any video only tied output can have an audio tie added, any audio only tied output can have a video tie added, and any output with both video and audio ties can have either the video or audio tie removed.

The following example illustrates the principles of making new video/audio ties.

An example of creating a set of video and audio ties

In the following example, input 3 is tied to outputs 2, 6, and 7 as video and audio.

NOTE *This example assumes that there are no existing ties for this input.*

1. Press and release the Esc button (see figure 3-3).

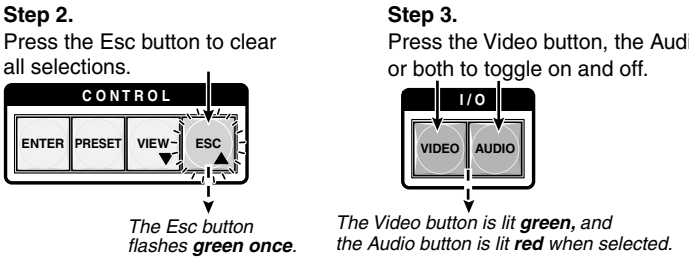


Figure 3-3 — Clear all pending selections, then select I/O

2. If not already lit, select (press) the Video and Audio buttons for the tie. (see figure 3-3).

3. Press and release the Input 3 button (figure 3-4).

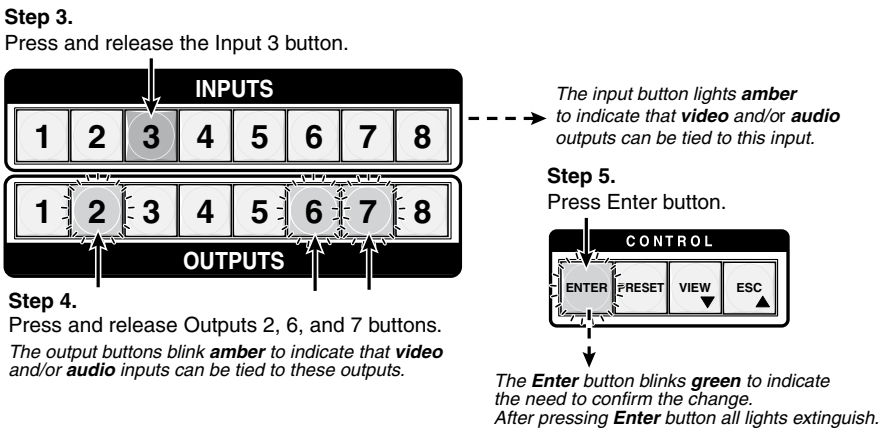


Figure 3-4 — Select the input, then the outputs, then press Enter

4. Press and release outputs 2, 6, and 7 buttons (figure 3-4). The three output buttons flash amber.

5. Press and release the Enter button (figure 3-4).

Viewing ties

To view existing ties do the following;

1. Press the View button (lights **red**).
2. The input/output ties can be viewed on the LCD display. Figure 3-5 shows the readout for the example above, where input 3 is tied to outputs 2, 6, and 7 as audio and video.

NOTE *If the LCD displays an "x" at any number position, that output is not available.*

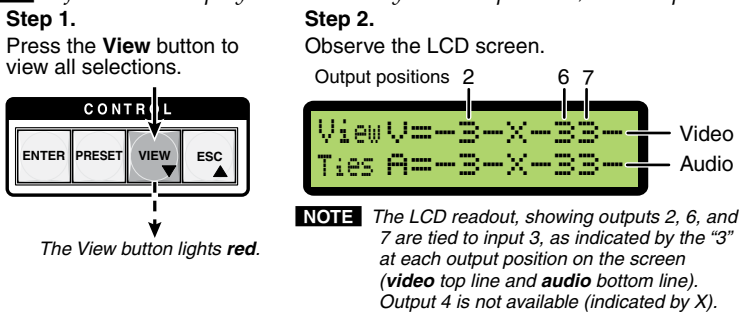


Figure 3-5 — View the existing ties on the LCD screen

3. **Untied** output buttons (in this example 1, 3, 4, 5, and 8) light **amber**, indicating that these buttons are still available for new ties (see figure 3-6).

NOTE *To clear the lights after viewing, press the Esc button. This does not clear or change any existing ties.*

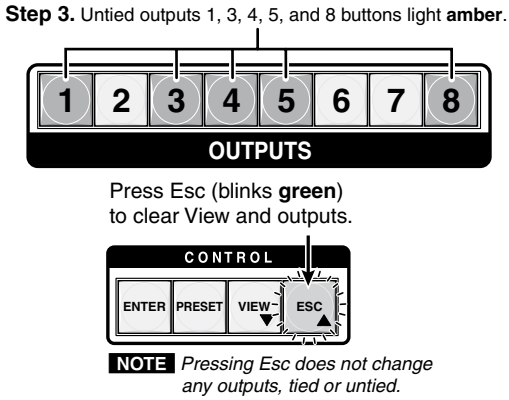


Figure 3-6 — Observe the untied outputs

NOTE *If only the Video button is lit, the outputs light green.*
If only the Audio button is lit, the outputs light red.

NOTE *The ties that can be made to any of the untied outputs can be video only, audio only, or both video and audio, and to any single input.*

Adding ties to existing ties

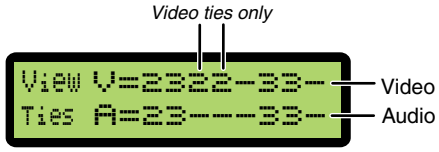
An audio tie can be added to an existing video tie, likewise a video tie can be added to an existing audio tie.

An example of adding an audio tie to an existing set of video ties

In the following example audio is added to existing video ties. In this example, input 2 is already tied to outputs 3 and 4 as video only and to output 1 as video and audio (see figure 3-7). Audio (such as a sound track) from input 8 is to be added to outputs 3 and 4.

NOTE *This example assumes that there are no other existing ties for input 8.*

1. Press View (lights **red**) and check the existing ties on the LCD screen (see figure 3-7).



Output 1 is tied to input 2 as video and audio
Outputs 2, 6, and 7 are tied to input 3 as video and audio
Outputs 3 and 4 are tied to input 2 as video only

Figure 3-7 — Example LCD readout before adding audio ties

2. Press and release the Esc button (see figure 3-8). The View button extinguishes and the LCD goes to default display mode.

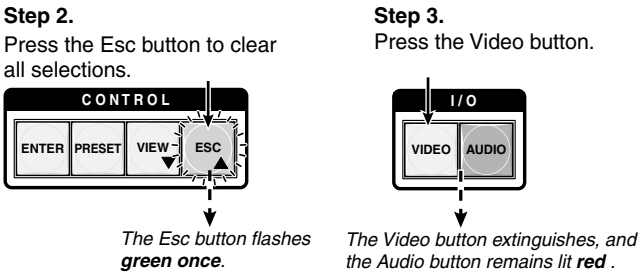


Figure 3-8 — Clear all pending selections, then deselect Video

3. If lit, deselect (press) the green Video button. This extinguishes it, leaving audio (lit red) only for this tie. (see figure 3-8).

4. Press and release the input 8 button (see figure 3-9). The button lights red.

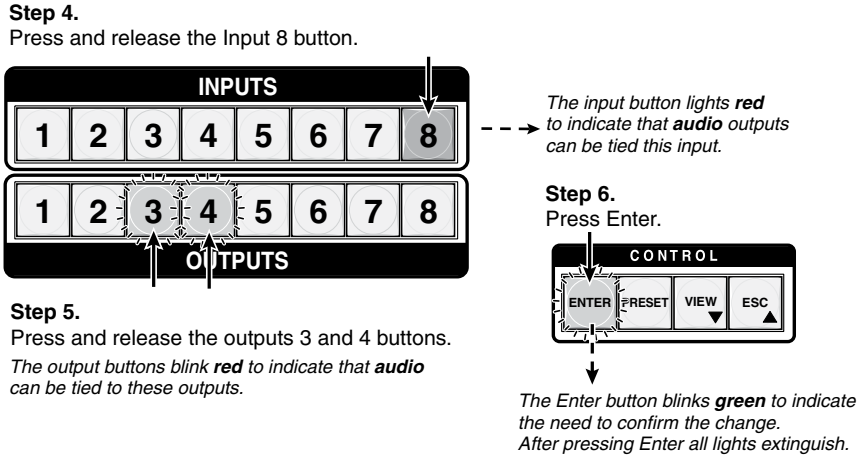
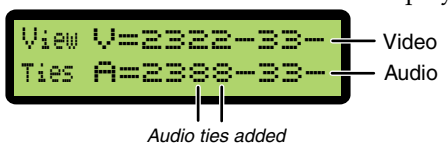


Figure 3-9 — Select the input, then the outputs, then press Enter

5. Press and release outputs 3 and 4 buttons (figure 3-9). The output buttons flash **red**.
6. Press and release the Enter button (figure 3-9). Input and output buttons extinguish. The audio from Input 8 is now tied to outputs 3 and 4, with the video from Input 2.

NOTE *The output buttons and the Enter button flashes for 30 seconds **only** and then extinguishes. The Enter button must be pressed before it becomes unlit. If it extinguishes before being pressed, repeat steps **3** and **4**.*

7. Press View and observe the LCD display (see figure 3-10).



Output 1 is still tied to Input 2 as video and audio
Outputs 2, 6, and 7 are still tied to Input 3 as video and audio
Outputs 3 and 4 are still tied to Input 2 as video, but now to Input 8 as audio

Figure 3-10 — Example LCD readout after adding audio ties

8. Press the Esc button to go back to the default display cycle.

NOTE ***Alternatively, to add a video tie to an existing audio tie** follow all the steps above, deselecting the audio button instead of the video button at step **3**. The input and output buttons light green.*

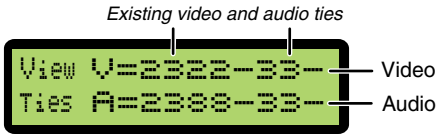
Removing ties

Any video and audio, video, or audio ties can be removed from an existing tie.

An example of removing a set of video ties from an existing set of video and audio ties

In the following example video is removed from an existing video and audio tie. In this example, Input 3 is already tied to outputs 2, 6, and 7 as video and audio (see figure 3-10). Video is to be removed from outputs 2 and 7.

1. Press View (lights **red**) and check the existing ties on the LCD screen (see figure 3-11)



Output 1 is tied to Input 2 as video and audio
Outputs 2, 6, and 7 are tied to Input 3 as video and audio
Outputs 3 and 4 are tied to Input 2 as video and to Input 8 as audio

Figure 3-11 — Example LCD readout before removing video ties

2. Press and release the Esc button (see figure 3-12). The View button extinguishes and the LCD goes to start-up mode.

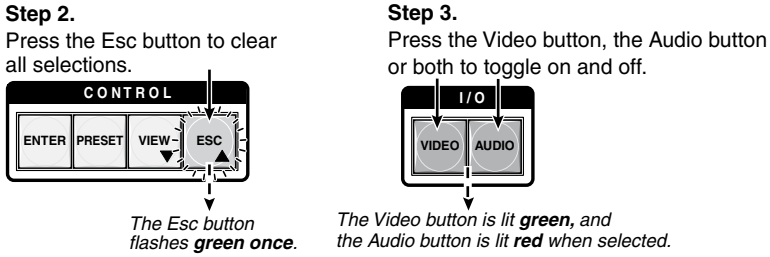


Figure 3-12 — Clear all pending selections, then select Video

3. If lit, deselect (press) the Audio button (lit **red**). This button extinguishes, leaving only video (lit **green**) for this selection (see figure 3-12).

4. Press and release the Input 3 button (see figure 3-13). The button lights **green**.

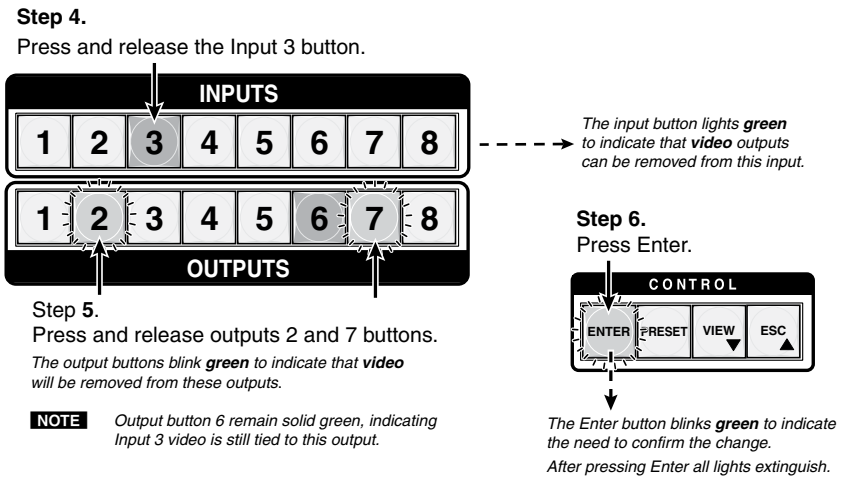


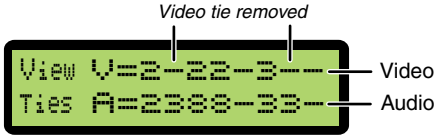
Figure 3-13 — Select the input, then the outputs, then press Enter

5. Press and release outputs 2 and 7 buttons (figure 3-13). The output buttons flash **green**.

6. Press and release the Enter button (figure 3-13). Input and output lights extinguish. The video from Input 3 is now removed from outputs 2 and 7.

NOTE *The output buttons and the Enter button flashes for 30 seconds and then extinguishes. The Enter button must be pressed before it becomes unlit. If it extinguishes before being pressed, repeat steps 3 and 4.*

7. Press View and observe the LCD display (see figure 3-14).



Output 1 is still tied to Input 2 as video and audio
Outputs 2 and 7 are now tied to Input 3 as audio only
Outputs 3 and 4 are still tied to Input 2 as video and to Input 8 as audio
Output 6 is still tied to Input 3 as video and audio

Figure 3-14 — Example LCD readout after removing video ties

8. Press Esc to clear View and reset the LCD.

9. Press any unlit I/O button to set it back to the default state.

Another video input can now be tied to outputs 2 and 7.

NOTE ***Alternatively, to remove an audio tie from an existing video and audio tie****, follow all the steps above, deselecting the Video button instead of the Audio button at step* ***3****. The input and output buttons light red.*

To remove both video and audio ties*, ensure both I/O buttons are lit at step* ***3****. The inputs and outputs light amber.*

Replacing ties

Existing output ties from any can input be replaced with another input, as long as that input is of a similar type (e.g., video for video and audio for audio).

An example of replacing an existing video tie with another video input

In the following example the video input tie on a specific output is replaced by another video input. In this example, the Output 1 video channel is already tied to Input 2 (see figure 3-15). Input 2's video is to be replaced by the video from Input 7.

1. Press View (lights **red**). Check the ties on the LCD screen (see figure 3-15).

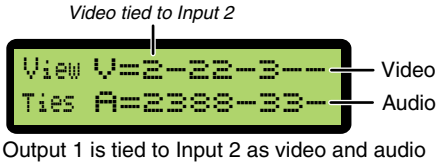


Figure 3-15 — Example LCD readout before replacing video tie

2. Press and release the Esc button (see figure 3-16). The View button extinguishes and the LCD goes to start-up mode.

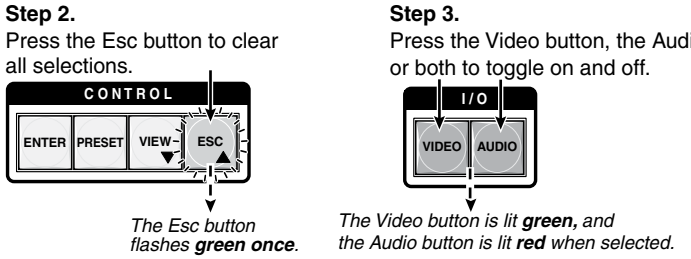


Figure 3-16 — Clear all pending selections, then select Video

3. If lit, deselect (press) the Audio button (lit **red**). This button extinguishes, leaving only video (lit **green**) for this selection (see figure 3-16).

4. Press and release the input 7 button (see figure 3-17). The button lights green.

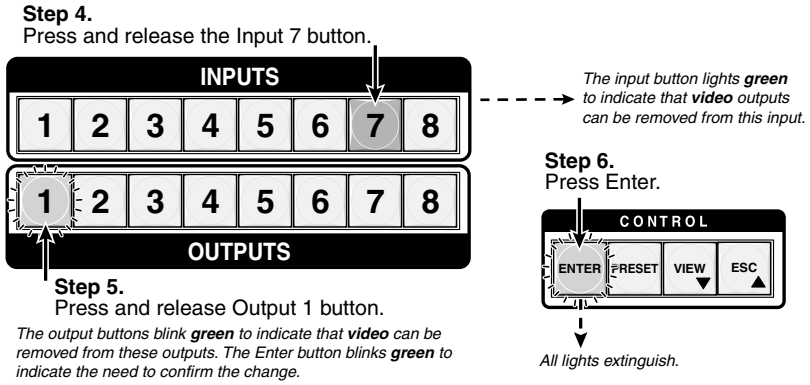


Figure 3-17 — Select the input, then the outputs, then press Enter

5. Press and release output 1 (figure 3-17). The output buttons flash **green**.

6. Press and release the Enter button (figure 3-17). Input and output lights extinguish. The video from input 2 is now replaced with video from input 7.

NOTE *The output buttons and the Enter button flashes three times **only** and then extinguishes. The Enter button must be pressed before it becomes unlit. If it extinguishes before being pressed, repeat steps 3 and 4.*

7. Press View and observe the LCD display (see figure 3-18).

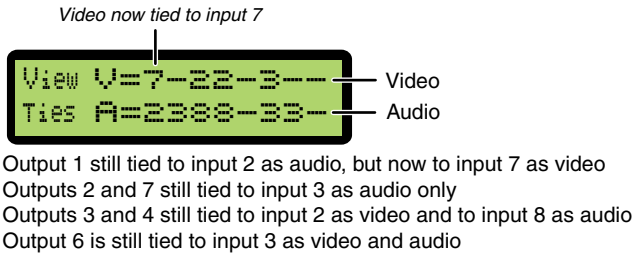


Figure 3-18 — Example LCD readout after replacing video ties

8. Press Esc to clear View and reset the LCD.

9. Press any unlit I/O button to set it back to the default state.

NOTE ***Alternatively, to replace an existing audio input tie with a different audio input tie,*** *follow all the steps below, deselecting (press) the video button instead of the audio button at step **3**. Input and output buttons light red.*

To replace both video and audio ties*, ensure both I/O buttons are lit at step **3**. The inputs and outputs light amber.*

I/O (Input/Output) grouping

The ISM 824 has I/O grouping, that allows the user via front panel control to setup four separate, non-interactive groups of inputs and outputs. The four groups are assigned by the control buttons as follows;
Enter = group #1, Preset = group #2, View = group #3, and Esc = group #4

NOTE *For I/O grouping to function at least two groups must be created.*

When setting up the groups from the ISM 824 front panel, any input or output can be assigned to any of the four groups, or to no group, but not to multiple groups. Only those inputs and outputs that are within the same group can be tied with one another. For example, inputs and outputs within group 4, cannot be tied to inputs or outputs belonging to groups 1, 2 or 3. Ungrouped inputs and outputs can be added to any group, or tied to one another independently of any group via front panel control.

NOTE *Inputs and outputs within different groups **can** only be tied to one another across the groups by using SIS™ commands or via the Ethernet. They cannot be tied by front panel operation or by ISM 824 Control software.*

Grouping allows specific video formats to be sent to output devices that support that format without fear of sending them to incompatible output device. Grouping can also be used for input and output devices that are physically in separate rooms, or for isolating video from being displayed on specific outputs for security reasons.

Existing groups are displayed on the LCD when grouping is being setup or changed. In addition, any selected input or output button, when pressed and held for three seconds, lights green if they are already assigned to a group (including group 0 = no group). At the same time the other buttons allocated to the same group also light green while the selected button is held down. This allows the user to tie those buttons within the same group.

NOTE *The device times out and all lit buttons extinguish, if the selected button is held for more than 30 seconds.*

An example of creating a set of I/O groups

In the following example one of the four sets of I/O groups are setup. In this example, input's 3, 4, and 8, and outputs 2, 3, and 8, are to be assigned to I/O group #2. All other buttons do not have a group assigned.

NOTE *I/O buttons light green when pressed. Do not confuse this with video signal only input or outputs that normally light green. Each input or output within a group can transmit video only, audio only, or both.*

1. Press Esc to clear all pending changes and reset the LCD (see figure 3-19).
2. Press and hold down the input and output buttons #1 simultaneously, for around 3 seconds (see figure 3-19). Those two buttons and the Enter button will stop flashing. All ungrouped buttons light steady green and the LCD screen displays the currently grouped input and output buttons, by their group number.

NOTE *In this example input #2 and output #'s 1, 5, and 7, have already been added to group #1. The remaining ungrouped buttons light green, and the LCD displays "1" for grouped, and "0" for ungrouped inputs and outputs.*

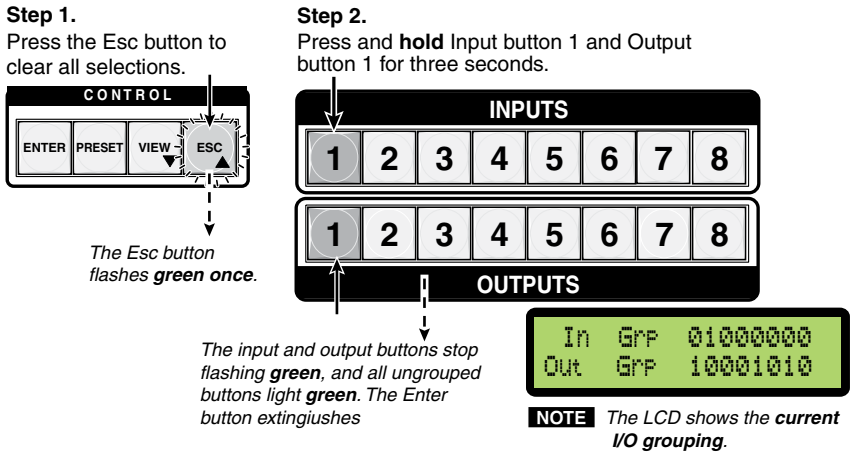


Figure 3-19 — Steps 1 and 2 for creating I/O grouping

3. To add inputs and outputs to group #2 (for example), press the Preset button (see figure 3-20). This lights amber and all input and output buttons extinguish.
4. Select input buttons 3, 4, and 8, and output buttons 2, 3, and 8 (see figure 3-20). These all light green.

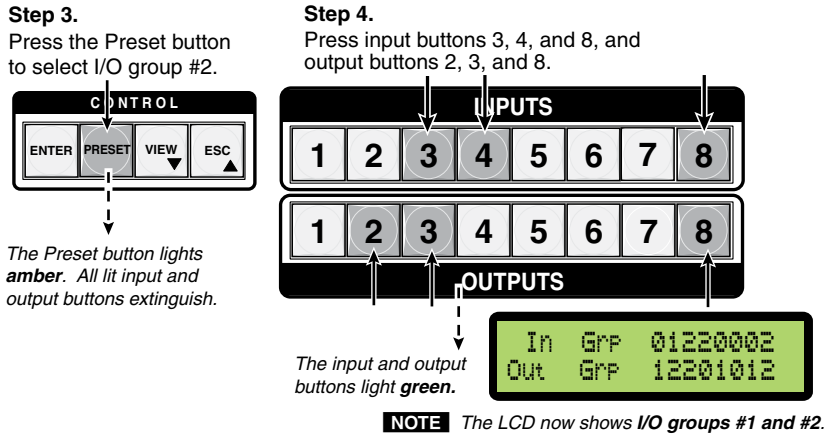


Figure 3-20 — Steps 3 and 4 for creating I/O grouping

NOTE *If after 30 seconds, no buttons have been selected, the device times out and reverts to the default cycle. No inputs or outputs are added to any group*

5. Press Menu. This clears the I/O group display and shows the first Menu. The group #2 now includes the selected input and outputs.

6. Press Esc to clear all pending changes and reset the LCD.

Muting or unmuting a video, audio, or video and audio output

Any output signal can be muted or unmuted. Muted signals are indicated by the output button flashing when in View mode and selected I/O buttons lit. The tie for the muted signal still exists.

NOTE *For scaled outputs, only RGB is muted. Sync is not muted.*

Muting an output

To mute an output signal, do the following;

1. Press Esc to clear all pending changes and reset the LCD.

2. Press and release the View button (lights **red**). The LCD shows the existing ties (see figure 3-21).

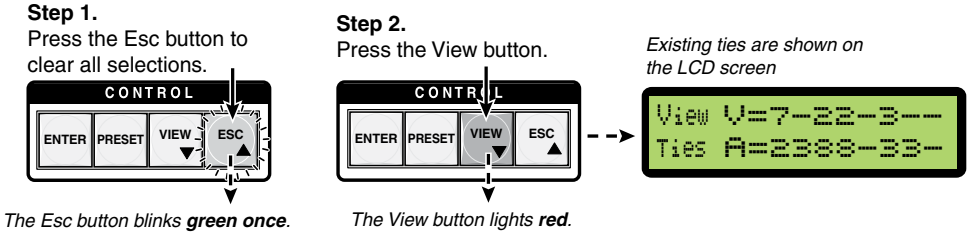


Figure 3-21 — Steps 1 and 2 for muting output signals

3. Select the video (lit **green**), audio (lit **red**), or both I/O buttons, depending on which output signal type is going to be muted (see figure 3-22).

NOTE *If the audio button is lit, then the audio signal is muted, if video button is lit, then the video signal is muted.*

*Output buttons with associated ties light the relevant color; **green** for video only, **red** for audio only, and **amber** for video and audio.*

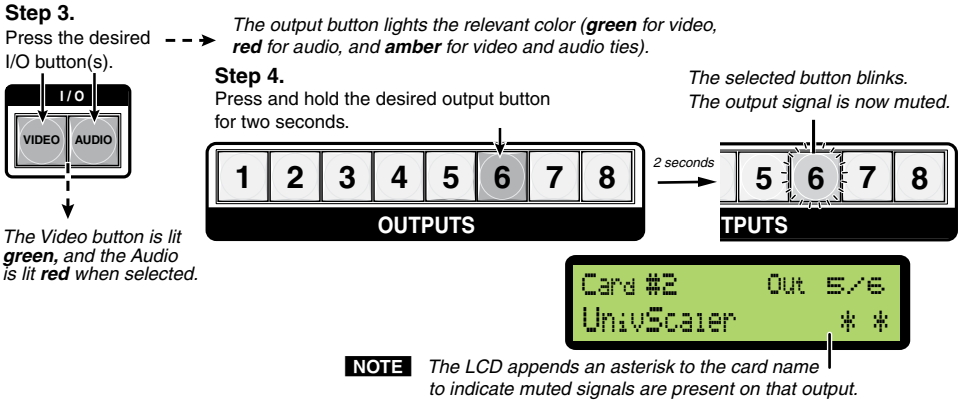


Figure 3-22 — Steps 3 and 4 for muting output signals

4. Press and hold the desired output button for 2 seconds, until the button flashes. This indicates the signal is now muted (see figure 3-22).

NOTE *The LCD indicates a muted signal by appending an asterisk along side the output card type name*

5. Press Esc (extinguishes View), and toggle the I/O buttons back to the default state (both lit).

Unmuting an output

To unmute an output signal:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the View button (lights **red**). The LCD shows existing ties.
3. Select the video (lights **green**), audio (lights **red**), or both I/O buttons, depending on which output signal is going to be unmuted.

NOTE *Output buttons with muted signals flash the relevant color; **green** for video only, **red** for audio only, and **amber** for video and audio. Unmuted signals are lit the relevant color.*

4. Press and hold the desired muted output button for 2 seconds, until the button light ceases to flash and remains lit. The signal is now unmuted.
5. Press Esc (extinguishes View and resets LCD), and toggle the I/O buttons back to the default state (both lit).

Viewing and setting the RGB delay

Setting RGB delay allows a brief, user defined delay to adjust the selected inputs sync timing before displaying the new picture. This allows the picture to appear without glitches. RGB delay is user selectable from 0 to 5 seconds, in 0.1 second increments.

Viewing the RGB delay

To view the RGB delay:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and hold the Video button for 3 seconds, until it flashes **green** and the Audio button extinguishes. The View, Esc, and one output button also lights green (see figure 3-23).

NOTE *The output button that lights is the last output button pressed in the previous front panel operation made just prior to this RGB viewing.*

The LCD shows the RGB delay for the indicated (lit) output (see figure 3-23).

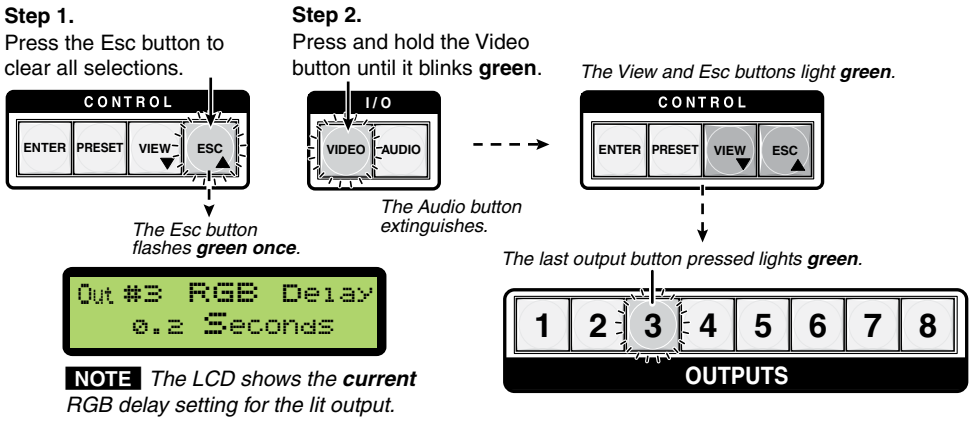


Figure 3-23 — Steps 1 and 2 for viewing RGB delay

3. If the output button lit is not the desired output, press and release the relevant button. That button lights green and the other output button extinguishes. The LCD changes to show the RGB delay for the selected output.

NOTE *If no buttons are pressed for 30 seconds after step 2, the RGB delay mode times out, and all buttons extinguish.*

4. Press the Video button to exit RGB delay mode. The Video button ceases flashing, and remains lit green, and the Audio button lights red. The View, Esc, and output buttons extinguish.

NOTE *Alternatively, pressing Enter or Preset exits the RGB delay mode.*

Changing the RGB delay

To change the RGB delay, do the following:

1. Press Esc to clear all pending changes and reset the LCD.
2. Press and hold the Video button for 3 seconds, until it flashes **green**. The View, Esc, and one output button lights green, and the LCD shows the RGB delay for the indicated (lit) output.

NOTE *The output button that lights is the last output button pressed in the previous front panel operation made just prior to this RGB viewing.*

3. Select the desired output button, and observe the LCD screen.
4. Use the View and Esc buttons to increase or decrease the RGB delay in 0.1 second steps until the desired setting is reached (see figure 3-24).

NOTE *Alternatively, either of the front panel encoders can be used to increase or decrease the RGB delay to the desired setting (see figure 3-24).*

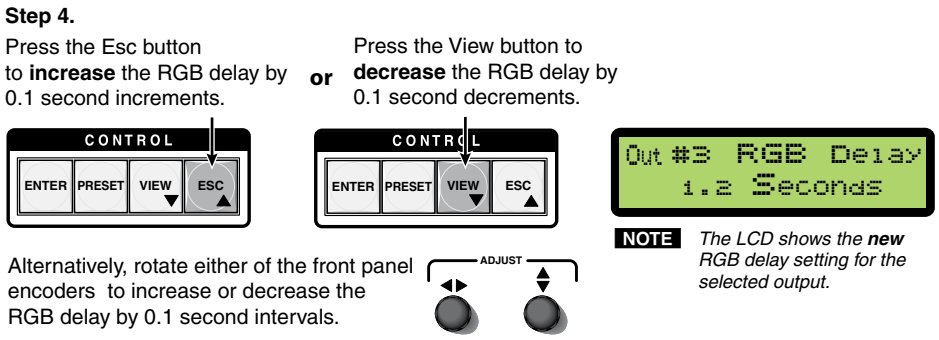


Figure 3-24 — Steps 4 for setting the RGB delay

5. Press the Video button to exit the RGB delay display and adjust mode. The Video button ceases flashing, and remains lit green. The Audio button lights red, and the View, Esc, and output buttons extinguish. The LCD resets.

NOTE *The RGB interval is stored in non-volatile memory. When power is removed and restored, the RGB delay settings are retained.*

Input audio level (gain) and output audio volume

Viewing input audio level and output audio volume

The audio level (gain) of each input can be viewed and adjusted through a range of -18 dB to +24 dB, in 1 dB steps. Adjustment can be made from the front panel, RS-232, or via Ethernet connection.

NOTE *See chapter 4, "SIS™ Programming and Control", for RS-232 commands, chapter 5, "ISM 824 Software" for Windows Control Program, or chapter 6, "HTML Operation", for Ethernet commands.*

The audio volume level of each output can also be viewed and adjusted through a range of 0 to 64 dB from the front panel (at 1.0 dB per step), or via RS-232 or Ethernet connection using Extron Simple Instruction Set (SIS™) commands. Adjustment is attenuation only.

To adjust the input audio level and output audio volume level, do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and hold the Audio button for 3 seconds, until it flashes **red**. The View, Esc, and one input button also lights red (see figure 3-25).

NOTE *The input button that lights is the last input button pressed in the previous front panel operation made prior to this viewing.*

The LCD shows the input audio level (gain) for the lit input (see figure 3-25), and the output audio volume for the last output selected.

NOTE *The output may not be tied to the lit input when;*
(1) the input is not tied to any output, or
(2) the input is tied to multiple outputs

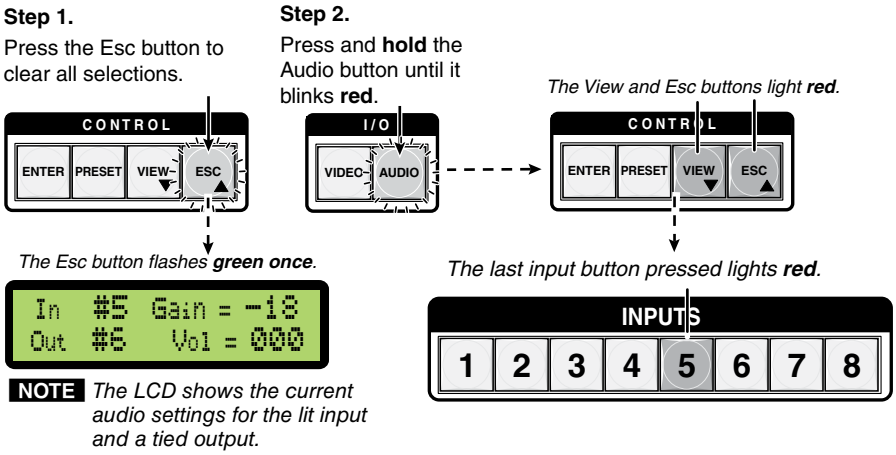


Figure 3-25 — Steps 1 and 2 for viewing the audio settings

3. If the input button lit is not the desired input, press and release the relevant input button. That button lights red and the other input button extinguishes. The LCD changes to show the input audio level for the selected input.

NOTE *The output readout on the LCD does not change at this time.*

NOTE *If no buttons are pressed for 30 seconds after step 2, the audio adjustment mode times out, and all buttons extinguish.*

4. If the LCD output readout is not the desired output, press and release the applicable output button. That button lights red and the input button extinguishes. The LCD changes to show the output audio level for the input.

NOTE *The input audio level readout on the LCD remains unchanged.*

5. Press the audio button to exit the audio display and adjust mode. The audio button ceases flashing, and remains lit red. The video button lights green, and the View, Esc, and output buttons extinguish. The LCD resets.

Adjusting input audio level and output audio volume

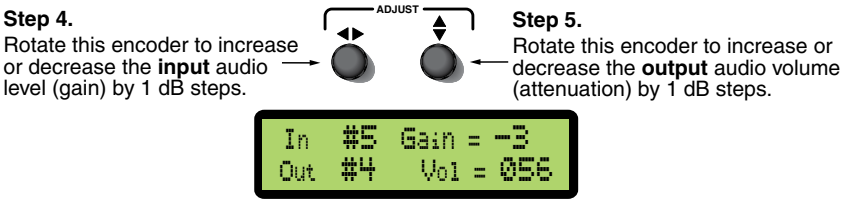
To adjust the input audio level and output audio volume level, do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and hold the Audio button for 3 seconds, until it flashes **red**. The View, Esc, and one input button lights red.

NOTE *The input button that lights is the last input button pressed in the previous front panel operation made prior to this viewing.*

The LCD shows the input audio level (gain) delay for the indicated (lit) input, and the output audio volume for any outputs tied to that lit input.

3. Select the desired input button, and observe the LCD screen.
4. Using the left encoder (◄►) on the front panel, increase or decrease the input audio level (gain) in 1 dB steps, until the desired setting is reached (see figure 3-26). The range is -18 dB to +24 dB.



NOTE *The LCD shows the **changed** audio settings for the selected input and output.*

Figure 3-26 — Steps 4 and 5 for adjusting the input and output audio settings

NOTE *Alternatively, **when the input button is selected and lit red**, use the View (▼) and Esc (▲) buttons to increase or decrease the input audio level (in 1 dB steps) to the desired setting.*

5. Use the right encoder (▲▼) on the front panel to increase or decrease the output audio volume (attenuation) in 1 dB steps, until the desired setting is reached (see figure 3-26). The range is 0 to 64.

NOTE *Alternatively, **when the output button is selected and lit red**, use the View and Esc buttons to increase or decrease the output audio volume (in 1 dB steps).*

6. Press the Audio button to exit the audio display and adjust mode. The Audio button ceases flashing, and remains lit red. The Video button lights green, and the View, Esc, and output buttons extinguish. The LCD resets.

NOTE *The audio level settings are stored in non-volatile memory. When power is removed and restored, the audio level settings are retained.*

I/O presets

Overview

The ISM 824 has a total of sixteen I/O preset memory addresses available. Each preset can be saved and recalled using the front panel input and output buttons with presets 1 through 8 assigned to the input buttons, and presets 9 through 16 assigned to the output buttons. Any current tie configuration can be saved to any one of the preset locations, in any order. Saving the current configuration to an existing preset overwrites that existing preset in favor of the new configuration.

Likewise, when a preset is recalled, it replaces the current (active) configuration, which is then lost unless already saved in a previous preset location. The recalled preset overwrites all of the current configuration ties, in favor of the recalled configuration. Read all the notes below.

NOTE *I/O presets are not the same as memory or user presets, which are used to store image sizing and centering configurations.*

NOTE *Presets can not be viewed from the front panel, unless recalled as the current configuration.*

NOTE *Only the audio and video ties are stored and recalled as a preset. Audio gain settings are not saved, and do not change when a preset is recalled.*

NOTE *The current configuration and all I/O presets are stored in non-volatile memory. When power is removed and restored, the current configuration is active and all presets are retained.*

NOTE *When a preset mode is recalled, all the input and output buttons with previously assigned presets light red.*

Saving a preset

To save a preset do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and hold the Preset button until it flashes **red**. Input and output buttons light red and the LCD panel shows the preset save mode (see figure 3-27).

NOTE *If no buttons are pressed for 30 seconds after step 2, the Preset mode times out, and all buttons extinguish.*

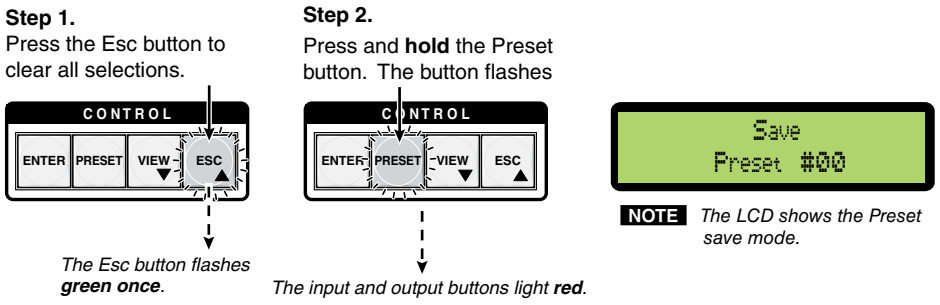


Figure 3-27 — Steps 1 and 2 for saving a preset

3. Press and release an input or output button as desired for the address to save the current configuration. The selected address button, the Preset button, and the Enter button flash red. The LCD shows the selected preset number (see figure 3-28).

NOTE *Input buttons have preset addresses 1 through 8, output buttons have preset addresses 9 through 16.*

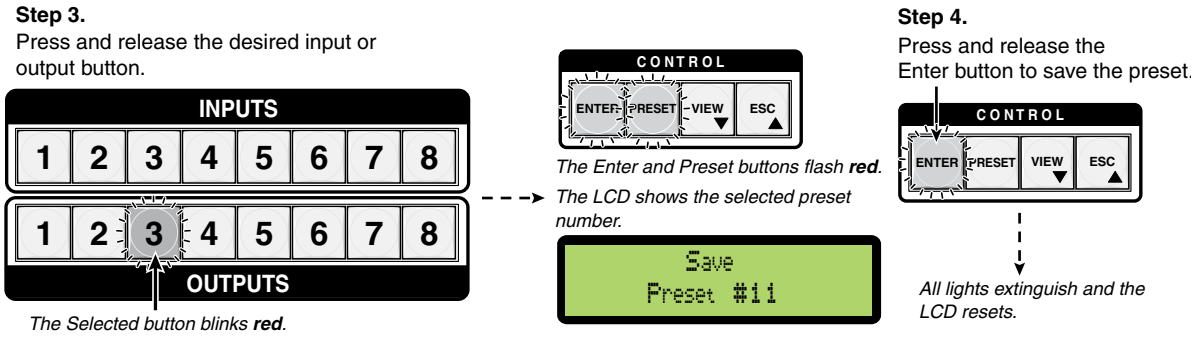


Figure 3-28 — Steps 3 and 4 for saving a preset

4. Press the Enter button. All lights extinguish and the preset (the current configuration) is saved.

Recalling a preset

To recall a preset do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the Preset button. The Preset button lights red, and input and output buttons with previously saved presets light red. The LCD panel shows the preset recall mode (see figure 3-29).

NOTE *If no buttons are pressed for 30 seconds after step 2, the Preset mode times out, and all buttons extinguish.*

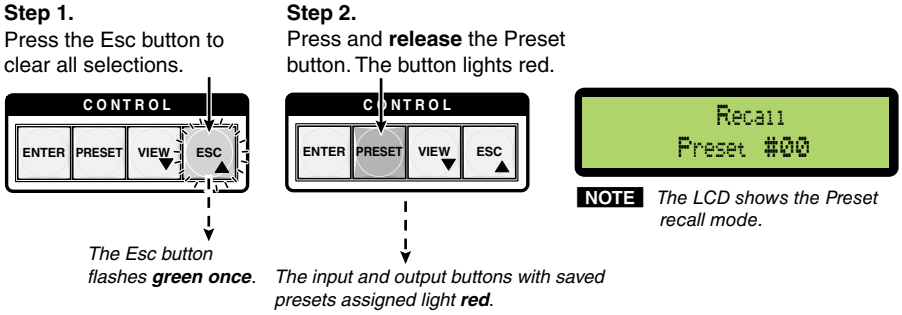


Figure 3-29 — Steps 1 and 2 for recalling a preset

3. Press and release the desired saved preset button (input or output) to recall. The selected button and the Enter button flash red. The LCD shows the selected preset number (see figure 3-30).

NOTE *Input buttons have preset addresses 1 through 8, output buttons have preset addresses 9 through 16.*

4. Press the Enter button. All lights extinguish (except Video and Audio) and the preset is recalled and becomes the current configuration.

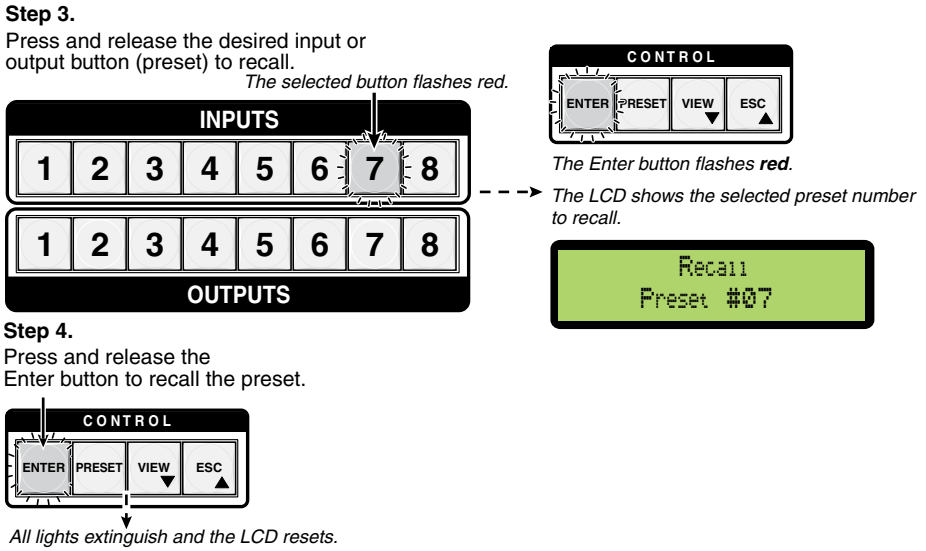


Figure 3-30 — Steps 3 and 4 for recalling a preset

Picture adjustments

Overview

The ISM 824 has six buttons for picture adjustment modes. These modes are color/tint, brightness/contrast, detail, position, size, and zoom adjustments.

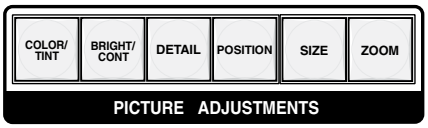


Figure 3-31 — Picture adjustment buttons

NOTE *Picture adjustments can only be made on input/output ties for Universal Scaler, Video Scaler, and Scan Converter output cards. All pass thorough and wide band outputs do not require any picture adjustment control.*

Adjustments can be made from the front panel, RS-232/RS-422, or via Ethernet connection.

See chapter 4, "SIS™ Programming and Control", for RS-232/RS-422 commands, chapter 5, "ISM 824 Multiswitcher Software", and chapter 6, "HTML Operation" for Ethernet commands.

The following table shows which adjustments can be made to specific input signal type and output card combinations.

Picture Adjustments	Universal Scaler	Video Scaler	Wideband Outputs
Color/Tint	Vid, YC (Tint on NTSC only)	Vid, YC (Tint on NTSC only)	N/A
Brightness/ Contrast	All inputs	Vid, YC, YUVi	N/A
Detail	All inputs	Vid, YC, YUVi	N/A
Position	All inputs	Vid, YC, YUVi	N/A
Size	All inputs	Vid, YC, YUVi	N/A
Zoom	All inputs	Vid, YC, YUVi	N/A

Figure 3-32 — Picture adjustment table

Adjustment configuration values are shown on the front panel LCD screen, or on the control device display if using RS-232 or Ethernet to make adjustments.

NOTE *Invalid picture adjustments for any input/output combination shows N/A instead of the configuration values.*

NOTE *For making adjustments via RS-232/RS-422, see chapter 4, "SIS™ Programming and Control" for methods and commands. For Windows Control Program, see chapter 5 " ISM 824 Multiswitcher Software", and for Ethernet methods and commands, see chapter 6, "HTML Operation".*

For front panel adjustments follow the sections below.

Adjusting the picture color/tint

To adjust the picture color/tint do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the Color/Tint adjustment button. The output buttons for scaler/scan converter cards (outputs 3 through 8) and any associated (tied) input button light solid green. Untied outputs flash green. The LCD panel shows the current color/tint setting (see figure 3-33) for that lit output.

NOTE *All applicable outputs light or flash green. To change to a different output, press the desired output button. The selected button lights green.*

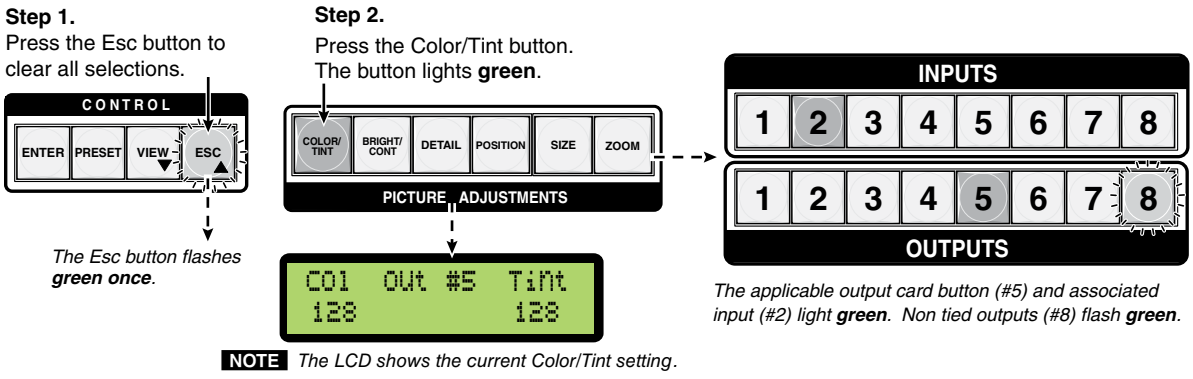


Figure 3-33 — Steps 1 and 2 for adjusting color and tint

3. Using the left front panel encoder (◄►), adjust the color (0 to 255, default is 128), and with the right (▲▼) encoder, adjust the tint (0 to 255, default is 128).

NOTE *If video or YC inputs are not an NTSC signal, the tint value is "N/A".*

4. Press the Esc button to clear all button and reset the LCD.

Adjusting the picture brightness/contrast

To adjust the picture brightness/contrast do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the Bright/Cont adjustment button. The output buttons for scaler cards (outputs 3 through 8) and any associated (tied) input buttons light solid green. Untied outputs flash green. The LCD panel shows the current bright/cont setting (see figure 3-34) for that lit output.

NOTE *All applicable outputs light or flash green. To change to a different output, press the desired output button. The selected button lights green.*

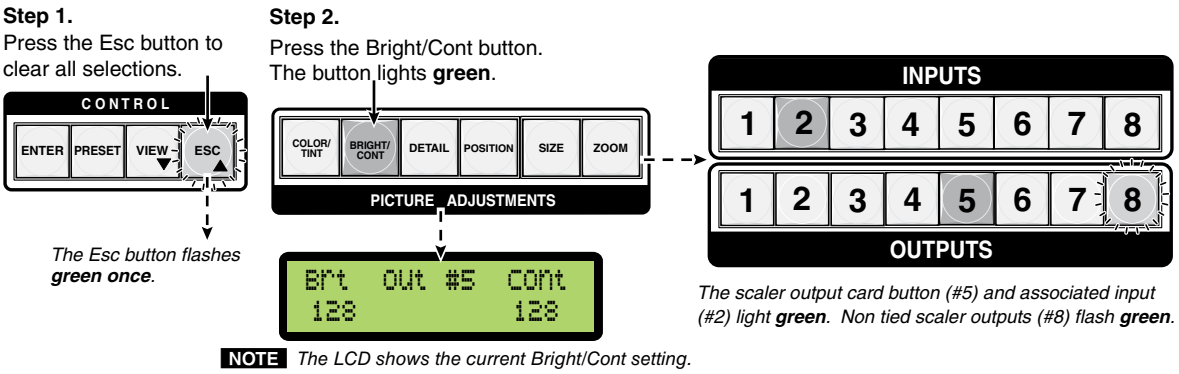


Figure 3-34 — Steps 1 and 2 for adjusting brightness and contrast

3. Using the left front panel encoder (◄►), adjust the brightness (0 to 255, default is 128), and with the right (▲▼) encoder, adjust the contrast (0 to 255, default is 128).

NOTE *Brightness and contrast adjustments are not available for scan converter cards.*

4. Press the Esc button to clear all button and reset the LCD.

Adjusting the picture detail

To adjust the picture detail do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the detail adjustment button. The output buttons for scaler /scan converter cards (outputs 3 through 8) and any associated (tied) input buttons light solid green. Untied outputs flash green. The LCD panel shows the current detail setting (see figure 3-35) for that lit output.

NOTE *All applicable outputs light or flash green. To change to a different output, press the desired output button. The selected button will light green*

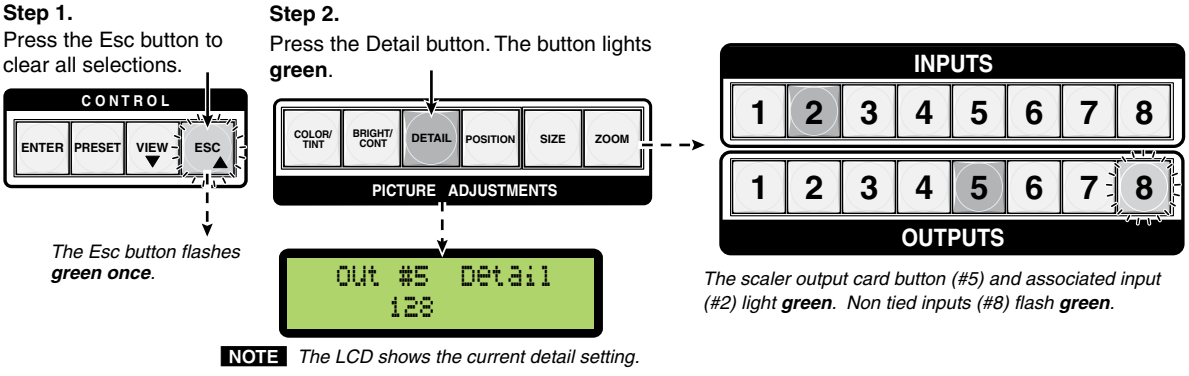


Figure 3-35 — Steps 1 and 2 for adjusting detail

3. Using either of the front panel encoders (◄► or ▲▼), adjust the detail.

NOTE *For Universal Scaler cards, detail range is 0 to 255, default is 128, and for Video Scaler cards, detail range is 0 to 63, default is 16.*

4. Press the Esc button to clear all button and reset the LCD.

Adjusting the picture position

To adjust the picture position do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the Position adjustment button. The output buttons for scaler /scan converter cards (outputs 3 through 8) and any associated (tied) input buttons light solid green. Untied outputs flash green. The LCD panel shows the current position setting (see figure 3-36) for that lit output.

NOTE *All applicable outputs light or flash green. To change to a different output, press the desired output button. The selected button will light green.*

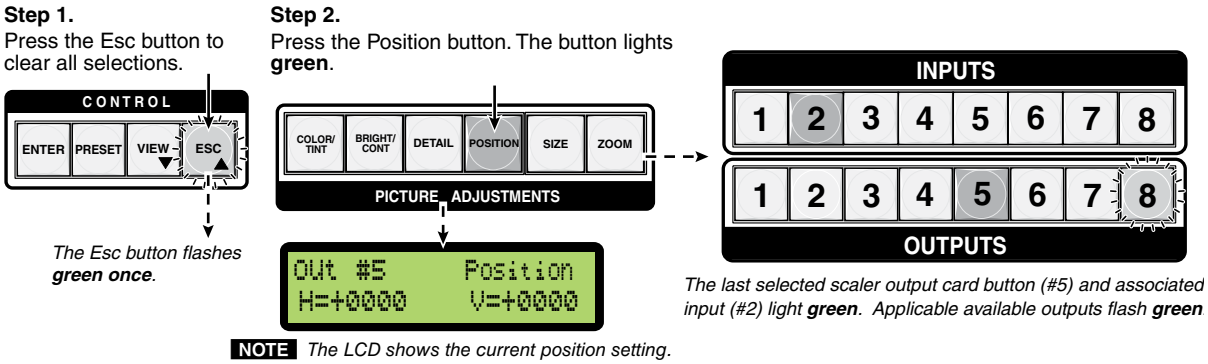


Figure 3-36 — Steps 1 and 2 for adjusting picture position

3. Use the left front panel encoder (◄►) to adjust the horizontal position.

NOTE *The horizontal adjustments values are:*
for the Universal Scaler card (-2047 to +2047, default is +0000)
for the Video Scaler card (-127 to +127, default is +0000)

A setting increment moves the whole picture to the right, and a setting decrement moves the whole picture to the left. The vertical alignment does not change.

Use the right front panel encoder (▲▼) to adjust the vertical position.

NOTE *The vertical adjustments values are:*
for the Universal Scaler card (-2047 to +2047, default is +0000)
for the Video Scaler card (-127 to +127, default is +0000)

A setting increment moves the whole picture down, and a setting decrement moves the whole picture up. The horizontal alignment does not change.

4. Press the Esc button to clear all button and reset the LCD.

Adjusting the picture size

To adjust the picture size do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the Size adjustment button. The output buttons for scaler /scan converter cards (outputs 3 through 8) and any associated (tied) input buttons light solid green. Untied outputs flash green. The LCD panel shows the current size setting (see figure 3-37) for that output.

NOTE *All applicable outputs light or flash green. To change to a different output, press the desired output button. The selected button will light green.*

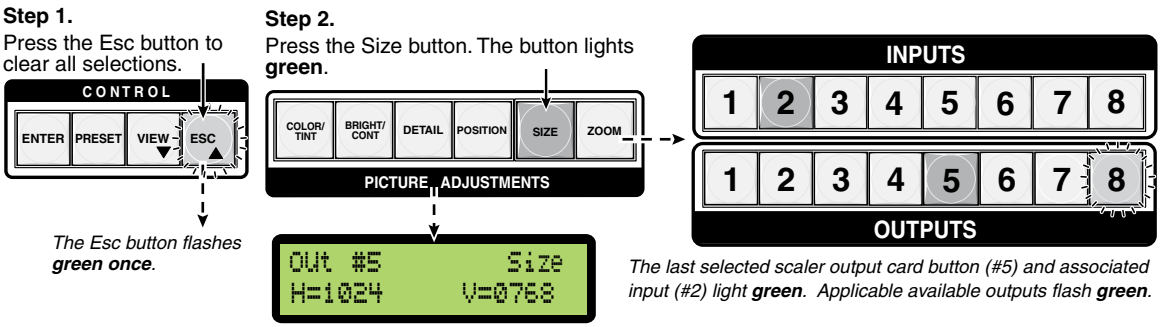


Figure 3-37 — Steps 1 and 2 for adjusting picture size

3. Use the left front panel encoder (◄►) to adjust the image horizontal size. Adjustments move only the right side of the image; outwards to make the image wider, or inwards to make the image narrower.

NOTE *A setting increment widens the picture out to the right, and a setting decrement narrows the picture in from the right. The vertical dimension does not change, and the image remains anchored at the active pixel horizontal and vertical start point, at the top left of the display.*

Use the right front panel encoder (▲▼) to adjust the image vertical size.

NOTE *A setting increment makes the picture taller, and a setting decrement shrinks the picture. The horizontal dimension does not change.*

With Universal Scaler cards, the image remains anchored at the active pixel horizontal and vertical start point. The vertical size adjustment moves only the bottom of the image, moving it down to make the image taller or up to make the image shorter.

4. Press the Esc button to clear all button and reset the LCD.

Adjusting the picture zoom

To adjust the picture zoom do the following:

1. Press the Esc button to clear all pending changes and reset the LCD.
2. Press and release the Zoom adjustment button. The output buttons for scaler /scan converter cards (outputs 3 through 8) and any associated (tied) input buttons light solid green. Untied outputs flash green. The LCD panel shows the current zoom setting (see figure 3-38) for that lit output.

NOTE *All applicable outputs light or flash green. To change to a different output, press the desired output button. The selected button will light green*

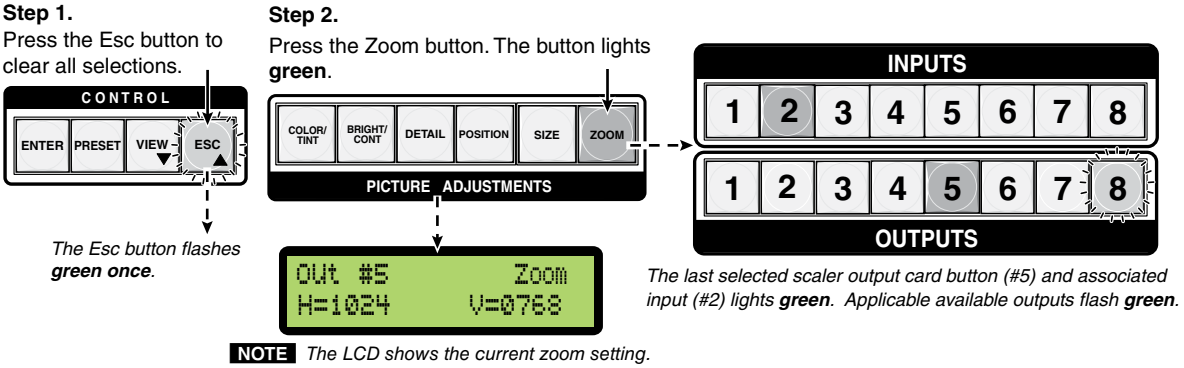


Figure 3-38 — Steps 1 and 2 for adjusting picture zoom

3. Use either of the front panel encoders (◄► or ▲▼) to adjust the image zoom. The dimensions of the of the image adjust uniformly.

NOTE *A setting increment makes the image larger, and a setting decrement shrinks the image. The right side and bottom of the image move outwards or inwards, and the image remains anchored at the active pixel horizontal and vertical start point, at the top left of the display.*

4. Press the Esc button to clear all button and reset the LCD.

Background illumination settings

The background illumination for input, output, control, and picture adjustment buttons can be toggled on or off (default state is off) as desired from the front panel. When the background illumination is on, the buttons are lit 25% amber. To toggle button background illumination on or off do the following:

1. Press and hold inputs 1 and 2 together, for 3 seconds. All buttons (except I/O buttons, Menu and Next) light 25% amber, if already off.

NOTE *When the unit is in Executive Mode 1 (View Mode), background illumination cannot be changed. See "Front panel security lockout (Executive mode)" section below for details.*

Front panel security lockout (Executive modes)

The front panel security lockout limits the operation of the Integration Scaling Multiswitcher from the front panel, locking some or all the entire front panel controls, with the exception of the RS-232/RS-422 and Ethernet ports. There are two levels of security available via the front panel, Executive modes 1 and 2.

- **Executive Mode 1— View Mode**. In this mode complete front panel lockout is achieved, except for viewing ties. No changes can be made and any attempted changes result in the I/O buttons blinking twice.

  To initiate Executive Mode 1 via the front panel, press and hold the Video and Audio buttons together for 2 seconds. The I/O buttons blink twice and remain lit, and the LCD displays Executive Mode View Mode.

  To exit Executive Mode 1, press and hold the Video and Audio buttons simultaneously for 2 seconds. The I/O buttons blink twice and remain lit, and the LCD displays Executive Mode Off.

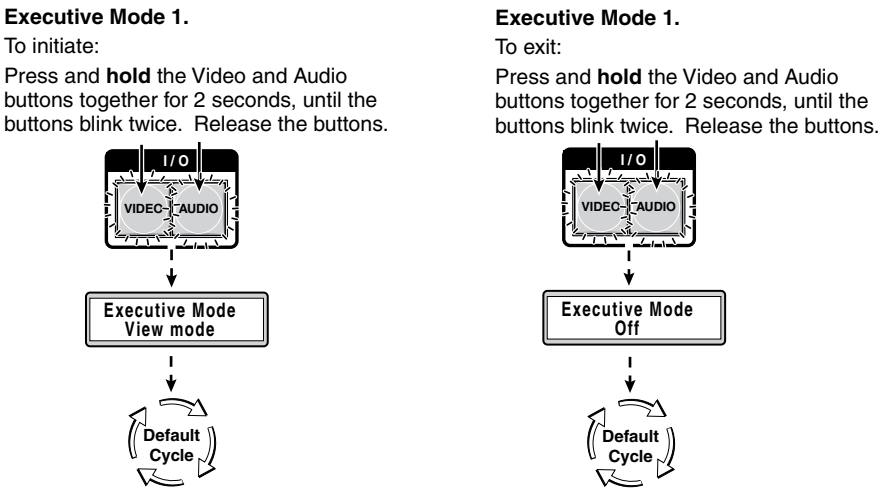


Figure 3-39 — Executive Mode 1 initiation and exit method

- **Executive Mode 2 — I/O ties only.** In this mode partial front panel lockout is achieved, allowing ties to be changed, I/O presets recalled, button background illumination control, and audio gain/attenuation control. Attempting other changes result in the I/O buttons and the Enter button blinking twice.

  To initiate Executive Mode 2 via the front panel, press and hold the Enter, Video, and Audio buttons together for 2 seconds. The I/O buttons and the Enter button blink twice. The I/O buttons remains lit, the Enter button extinguishes, and the LCD displays Executive Mode I/O Ties Only. Release the buttons.

  To exit Executive Mode 2, press and hold the Enter, Video, and Audio buttons together for 2 seconds. The I/O buttons and the Enter button blink twice. The I/O buttons remains lit, the Enter button extinguishes, and the LCD displays Executive Mode Off. Release the buttons.

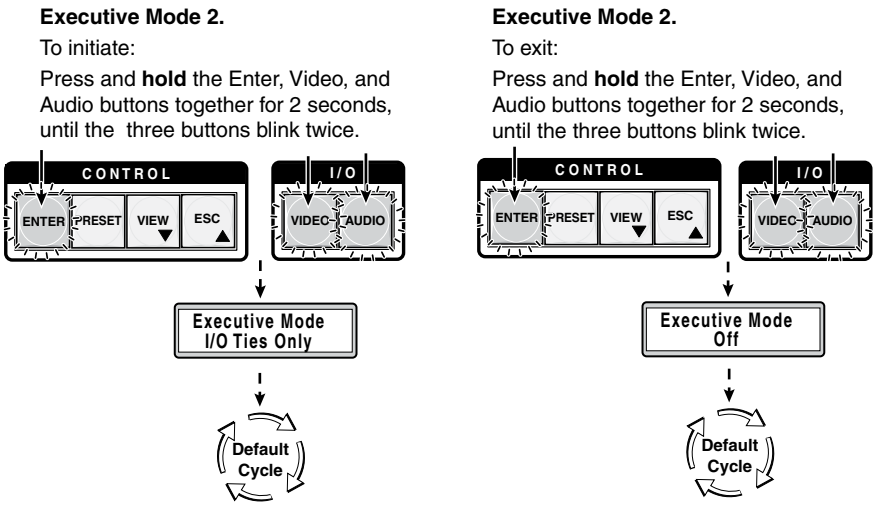


Figure 3-40 — Executive Mode 2 initiation and exit method

ISM 824 Menu System

The ISM 824 has a six level menu system. Access to each level and sub-level is made by using the menu control buttons.

- **Menu button —** The Menu button enters and moves through the main menu system in the ISM. See "Front Panel Operations" in this chapter for details.
- **Next button —** The Next button steps through the submenus in the ISM menu system or exits the menu system. See "Front Panel Operations" in this chapter for details.

Each level has separate submenus, which are accessed by pressing the Next button. At any point within a submenu, pressing the Menu button takes the user back up a sub-level. Repeated pressing of the Menu button eventually takes the user out to the top level menus. The top level menu flow is shown in figure 3-41. Individual menu sub level access and operation is discussed in detail below.

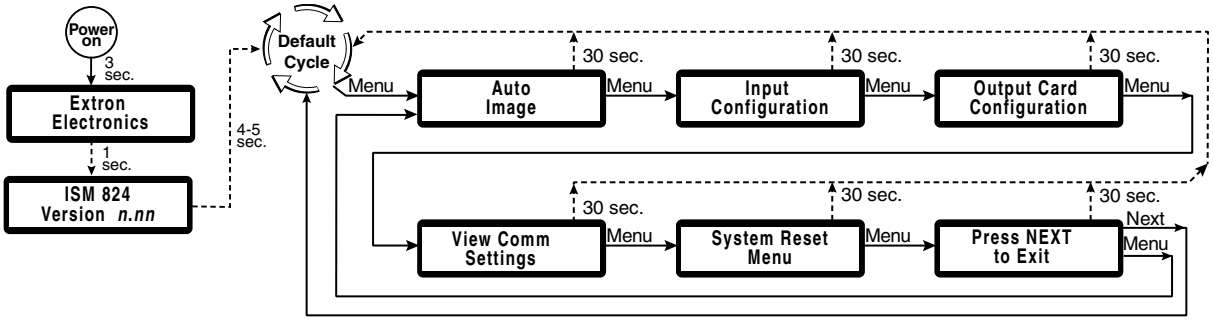


Figure 3-41 — ISM 824 Top level menu flow

Auto Image menu

This is the first menu level, and is reached by pressing the Menu button once when the unit is in default display cycle. This menu allows the user to apply auto image features to applicable outputs.

Useful for where a variety of input sources might be used, the ISM 824 auto image feature automatically sizes and centers the selected input to fill the screen every time a new input signal is detected. This is done regardless of whether that input frequency has been detected before, to overcomes problems occurring on signals having the same H and V frequencies, but different active video timing.

NOTE *Auto image is not available for all outputs. When auto image is selected, only those output buttons for scaler/scan converter cards having auto image capability and an active input signal flash green.*

To set up auto image for an output card, do the following:

1. From the default cycle, press the Menu button once to select the auto image menu (see figure 3-42).

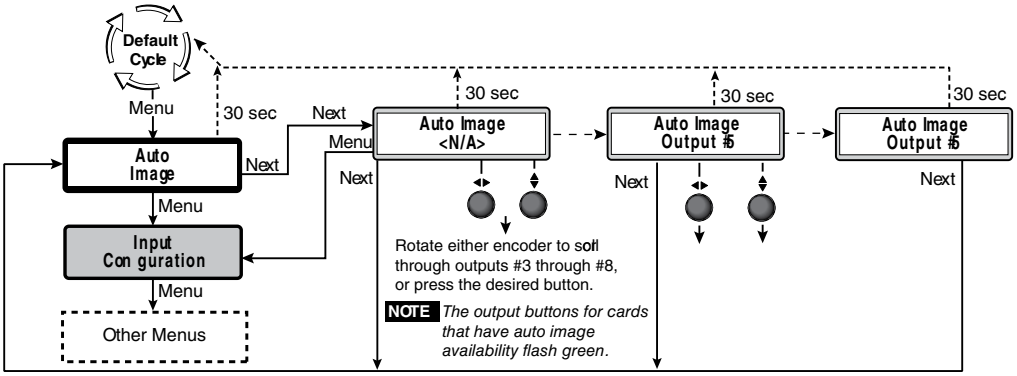


Figure 3-42 — Auto image menu

2. Press the Next button to enter the sub level.
3. Rotate either encoder to select the desired output, or press the desired output button.

NOTE *When an output is selected that output button remains steady green, and other available output buttons continue to flash green.*

4. Press Next to exit the sub level. Auto image is applied to that selected output.
5. Press the Menu button or wait for 30 seconds to return to default cycle

Input configuration menu

This is the second menu level, and is reached by pressing the Menu button twice, or pressing the button a number of times until the Input Configuration menu is shown on the LCD screen.

This menu allows the user to define the signal format for any individual input. The signal formats available are RGB (the default), YUV-HD, YUVp, YUVi, S-video, and composite. The input signal may be processed or passed unprocessed depending on the output selected for that input.

To configure and input signal format, do the following:

1. From the default cycle, press the Menu button twice to select the input configuration menu (see figure 3-43)
2. Press the Next button to enter the sub level.

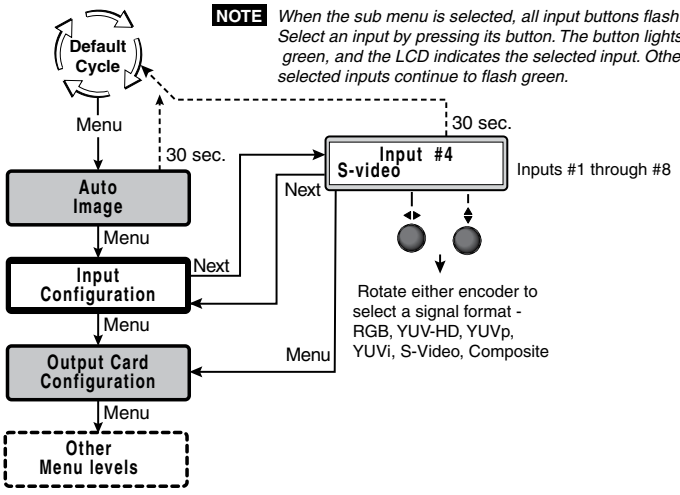


Figure 3-43 — Input configuration menu

NOTE *When the sub level is entered, the last selected input lights steady green. All other input buttons flash green.*

3. Select the desired input by pressing its button. That button lights green, and all other buttons flash green. The LCD screen indicates the input number selected.
4. Rotate either encoder to select the signal format for that input.
5. Either select another input and repeat step **4**, or press the Next or Menu buttons to exit up to the top level menu. Alternatively wait 30 seconds for the device to time out to the default display.

Output card configuration menu

This third menu level is reached by pressing the Menu button three times, or a number of times until the Output Card Configuration menu is shown in on the LCD screen. This series of submenus is used to configure the optional Universal and Video Scaler output cards.

NOTE *Universal Scaler and Video Scaler cards have a different set of submenus and are discussed separately.*

Press the Next button to bring up the first submenu (Select Output). The last configurable output button selected lights green. If a different output type is to be configured, press the output button for that card, or rotate either front panel encoder to select the output.

Universal Scaler configuration menu

To configure the Universal Scaler card using the Output Card Configuration menus (see figure 3-44), follow the steps in each submenu shown below.

The Output Card Configuration submenus for the Universal Scaler card are; Select Output, Input Setup, Output Config., User Presets, and Advanced Config.

NOTE *Within any submenu, press the Menu button to go directly to the top level (Output Card Configuration) menu.*

If no front panel buttons or encoders are used for 30 seconds, the device times out and goes back to the default display cycle.

If a Universal Scaler card (ISM RGB) is installed, during power up a color bar test briefly appears on the display device.

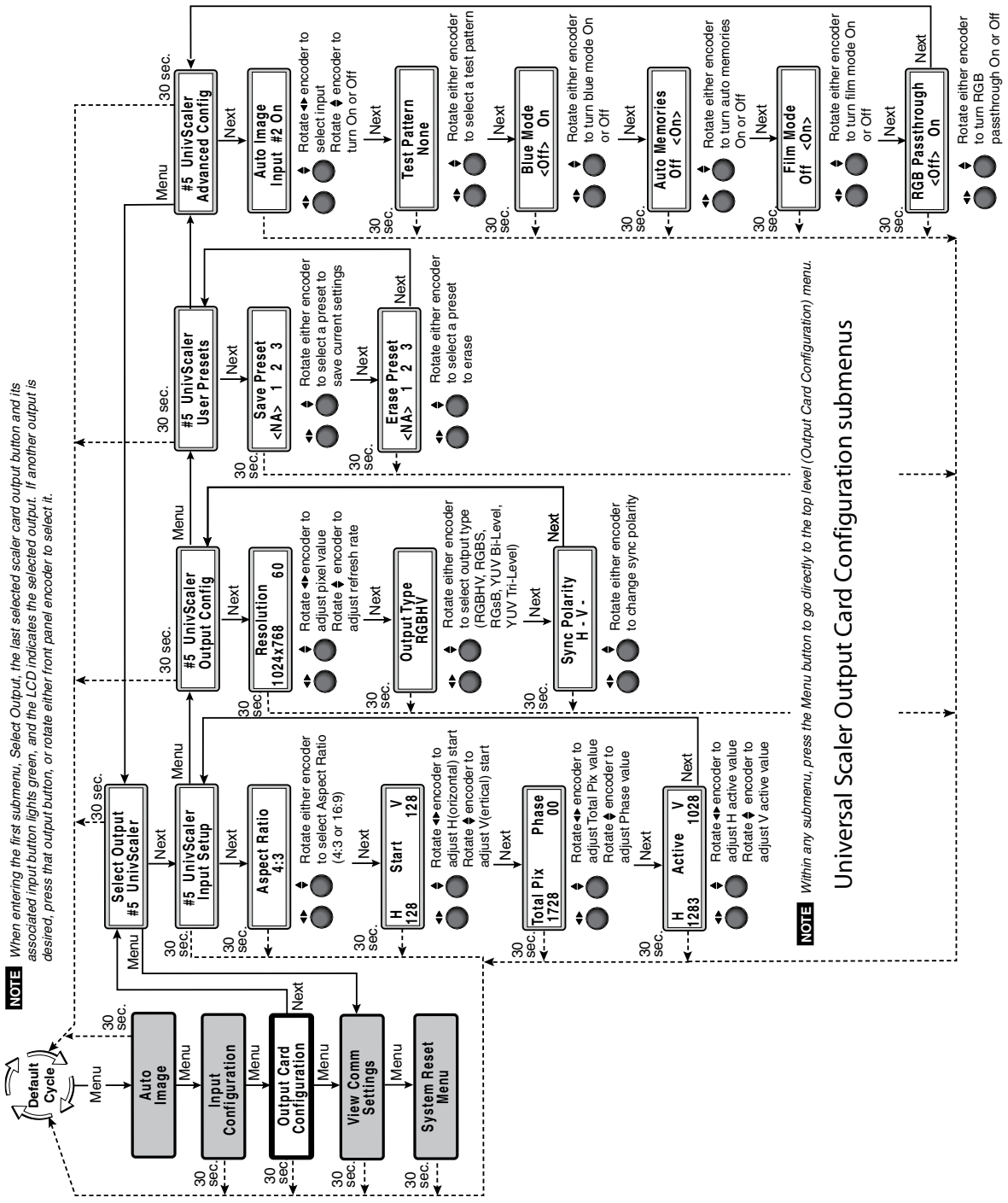


Figure 3-44 — Output card configuration menu for Universal Scaler card

Select Output submenu

This submenu allows selection of any installed Universal Scaler outputs to be configured using further submenus. To select an output to configure, do the following:

1. From the top level (Output Card Configuration) menu, press Next to enter the first submenu level (Select Output). The last selected scaler card output button and its associated input button lights green, and the LCD indicates the selected output.
2. If configuration of another output is desired, press that output button to select it. The LCD shows the new selection, and the corresponding buttons light.
3. Proceed to the rest of the submenus to configure the selected output.

Input Setup submenu

This submenu allows configuration of the input tied to the selected output. Depending on the source format, selection and/or adjustment of the aspect ratio, horizontal and vertical start position, total pixel and pixel phase values, and the number of horizontal and vertical active pixels is made by doing the following:

1. From the Select Output menu press Next. The submenu series, Input Setup, becomes active. See the table below for source format and associated configuration possibilities.

Adjustment	Source Format					
		Y, R-Y, B-Y				
	RGB	HD	Prog	Inter	S-Video	Composite
Total Pixels	X	X	X			
Active Pixels	X	X	X	X	X	X
Active Lines	X	X	X	X	X	X
Phase	X	X	X			
H Start	X	X	X	X	X	X
V Start	X	X	X	X	X	X

Figure 3-45 — Source format and configuration table

2. Press Next to bring up the submenu to select the Aspect ratio.

   Rotate either front panel encoder to select between a 4:3 or 16:9 aspect ratio.

3. Press Next to go to the next submenu, Horizontal and Vertical Start. This submenu allows the user to adjust the image H and V pixel starting point.

   Rotate the left front panel encoder (◄►) to adjust the H value, and rotate the right encoder (▲▼) to adjust the V value. The default for both is 128.

4. Press Next to go to the next submenu, Total Pixels and Phase value. This submenu allows the user to adjust the number of pixels and the pixel phase. Pixel phase is the timing of the scaler's sampling.

   Rotate the left front panel encoder (◄►) to adjust the total pixel value, and rotate the right encoder (▲▼) to adjust the pixel phase value.

5. Press Next to go to the next submenu, H and V Active pixels. This submenu allows the user to adjust the number of active pixels.

   Rotate the left front panel encoder (◄►) to adjust the H pixel value, and rotate the right encoder (▲▼) to adjust the V line value.

6. Press Next to return back to the Input Setup menu.
7. Press Menu to go to the next submenu (Output Config).

Output Config submenu

Within this submenu, the resolution, the refresh rate, the output signal type, and the sync polarity can be selected and adjusted.

1. From the Input Setup submenu press Menu.
2. Press Next to bring up the Resolution submenu. In this submenu, the resolution and refresh rate can be adjusted.
3. Rotate the left front panel encoder (◄►) to adjust the resolution value, and rotate the right encoder (▲▼) to adjust the refresh rate.

NOTE *There are 19 output resolutions (see table) to choose from (640 x 480 at 50 Hz through 1080p at 60 Hz). The refresh rate is based on the resolution selected.*

Resolution	50 Hz	60 Hz	72 Hz	96 Hz	100 Hz	120 Hz
640x480	X	X	X	X	X	X
800x600	X	X	X	X	X	X
852x480	X	X	X	X	X	
1024x768	X	X	X	X		
1024x852	X	X	X	X		
1024x1024	X	X	X			
1280x768	X	X	X	X		
1280x1024	X	X	X			
1360x765	X	X	X			
1365x768	X	X	X			
1366x768	X	X	X			
1365x1024	X	X				
1400x1050	X	X				
1600x1200	X	X				
480p		X				
576p	X				X	
720p	X	X				
1080i	X	X				
1080p	X	X				

Figure 3-46 — Universal Scaler output resolution/refresh rate table

4. Press Next to enter the next submenu, Output Type. Within this submenu the output signal type (RGBHV, RGBS, RGsB, YUV Bi-Level, or YUV Tri-Level) can be selected.

   Rotate either front panel encoder to select the output signal type.

5. Press Next to enter the next submenu, Sync Polarity. Within this submenu, the Sync Polarity can be set (H- V-, H+ V-, H+ V+, or H- V+).

   Rotate either front panel encoder to adjust the polarity setting. The table below gives the recommended settings.

Output Configuration (Scaler boards)	
Output Format	**Sync Polarity**
RGBHV	H- V-
RGBS	H- V+
RGsB	H+ V-
YUV Bi-Level	H+ V+
YUV Tri-Level	H+ V+

Figure 3-47 — Universal Scaler sync polarity table

5. Press Next to return to the upper level Output Config. menu.
6. Press Menu to go to the next submenu (User Presets).

User Presets submenu

Within this submenu, up to 3 presets can be saved or erased.

1. From the Output Config. menu, press Menu to enter the User Presets submenu.
2. Press Next to go to the Save Preset menu.

   Rotate either front panel encoder to select the preset (1, 2 or 3) to save the current settings. Default setting is N/A.
3. Press Next to go to the Save Preset menu.

   Rotate either front panel encoder to select the preset to be erased (1, 2 or 3). Default setting is N/A.
4. Press Next to return to the User Preset menu.
5. Press Menu to go to the next submenu (Advanced Config).

Recall a User Preset

1. Press the Esc button to clear all active menus and reset the LCD to default menu cycle.
2. Make an input tie to the desired scaler output to recall any one of the three saved presets, numbered 1 to 3.
3. Press the output button. The LCD displays the message shown below.

4. Press the output button to cycle through the saved output presets (1, 2, or 3).

5. If no presets were saved previously, the following message is displayed.

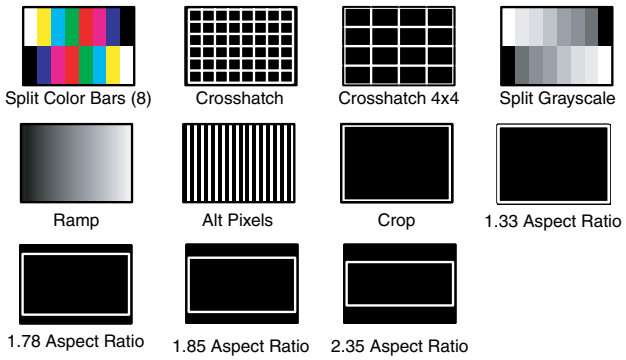
Advanced Config submenu

Within this submenu auto image can be turned on or off, test patterns can be selected. In addition, blue mode, auto memory, film mode, and RGB passthrough can be all turned on or off separately.

1. From the User Presets submenu, press Menu to enter the Advanced Config. submenu.
2. Press Next to go to the Auto Image menu. Auto Image can be turned on or off for any input from this menu. Default setting is off.

   Rotate the left front panel encoder (◄►) to select the input, and rotate the right encoder (▲▼) to turn auto imaging on or off.
3. Press Next to go to the Test Pattern menu. From this menu one of the following test patterns can be selected:

   None (default)
   Split Color Bars (8)
   Crosshatch 4:3/16:9
   Crosshatch 4x4
   Split Grayscale
   Ramp
   Alternating Pixels
   Crop
   1.33 Aspect ratio
   1.78 Aspect ratio
   1.85 Aspect ratio
   2.35 Aspect ratio



   Rotate either front panel encoder to select the test pattern. The selection becomes active on the display device, regardless of the current input/output signal. Default setting is None.
4. Press Next to go to the Blue Mode menu. Blue Mode can be turned on or off from this menu. Default setting is off

   Rotate either front panel encoder to tun the blue mode on or off. When turned on, only sync and the blue video signals are displayed.
5. Press Next to go to the Auto Memories menu. Auto Memories can be turned on or off from this menu. Default setting is on.

   Rotate either front panel encoder to tun the auto memory on or off
6. Press Next to go to the Film Mode menu. Film Mode can be turned on or off from this menu. Default setting is On.

   Rotate either front panel encoder to turn the Film mode on or off.
7. Press Next to go to the RGB pass through menu. RGB signals are passed through unprocessed when this setting is turned On. Default setting is Off.

   Rotate either front panel encoder to turn RGB Pass through on or off.
8. Press Next to return back to the Advanced Config. menu.
9. Press Menu twice to go to the next top level menu, View Comm Settings

Video Scaler configuration menu

To configure the Video Scaler card using the Output Card Configuration menus (see figure 3-48), follow the steps in each submenu shown below.

The Output Card Configuration submenus for the Video Scaler card are: Select Output, Output Config., User Presets, and Advanced Config.

NOTE *Within any submenu, press the Menu button to go directly to the top level (Output Card Configuration) menu.*

NOTE *If no front panel buttons or encoders are used for 30 seconds, the device times out and goes back to the default display cycle.*

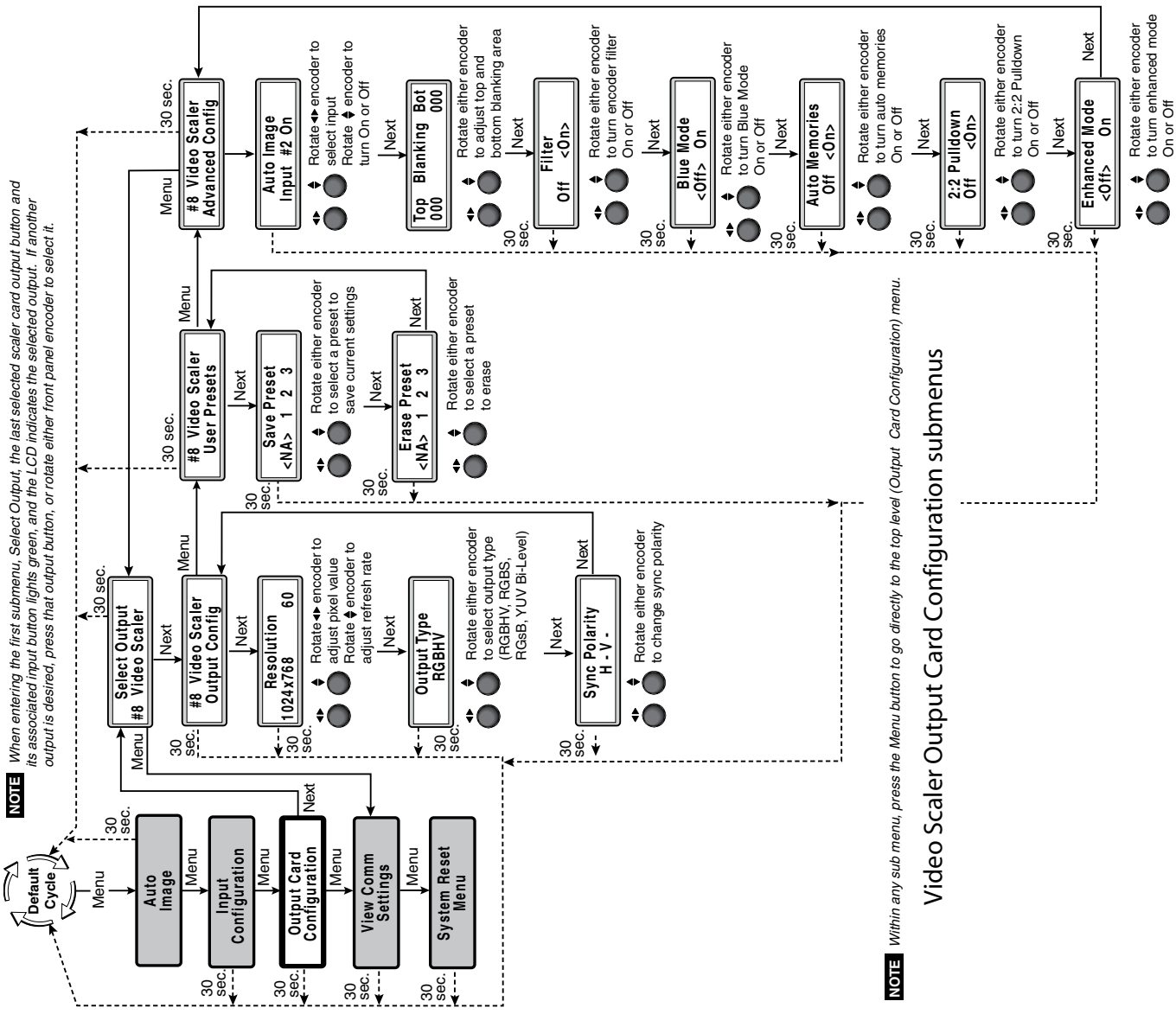


Figure 3-48 — Output configuration menu for Video Scaler card

Select Output submenu

This menu allows selection of any configurable Video Scaler outputs installed to be configured using further submenus. To select an output to configure, do the following:

1. From the top level (Output Card Configuration) menu, press Next to enter the first submenu level (Select Output). The last selected scaler card output button and its associated input button lights green, and the LCD indicates the selected output.
2. If configuration of another output is desired, press that output button to select it. The LCD shows the new selection, and the corresponding buttons light.
3. Proceed to the rest of the submenus to configure the selected output.

Output Config submenu

Within this submenu, the resolution, the refresh rate, the output signal type, and the sync polarity can be selected and adjusted.

1. From the Output Config. submenu press Menu.
2. Press Next to bring up the Resolution submenu. In this submenu, the resolution and refresh rate can be adjusted.

NOTE *There are 19 output resolutions to choose from (640 x 480 at 50 Hz through 1080p at 60 Hz). The refresh rate is dependant on the resolution selected. See the resolution/refresh rate table below.*

Resolution	50 Hz	60 Hz	72 Hz	96 Hz	100 Hz	120 Hz
640x480	X	X				
800x600	X	X				
852x480	X	X				
1024x768	X	X				
1024x852						
1024x1024						
1280x768	X	X				
1280x1024	X	X				
1360x765	X	X				
1365x768	X	X				
1366x768	X	X				
1365x1024	X	X				
1400x1050	X	X				
1600x1200						
480p		X				
576p	X					
720p	X	X				
1080i	X	X				
1080p	X	X				

Figure 3-49 — Video Scaler output resolution/refresh rate table

Rotate the left front panel encoder (◄►) to adjust the resolution value, and rotate the right encoder (▲▼) to adjust the refresh rate.

3. Press Next for the next submenu, Output Type. Within this submenu the output signal type (RGBHV, RGBS, RGsB, YUV Bi-Level) can be selected.

   Rotate either front panel encoder to select the output signal type.

4. Press Next to enter the next submenu, Sync Polarity. Within this submenu, the Sync Polarity can be set (H- V-, H+ V-, H+ V+, or H- V+).

   Rotate either front panel encoder to select the output signal type.

5. Press Next to return to the Output Config. menu.

User Presets

Within this submenu, up to 3 presets can be saved or erased.

1. From the Output Config. menu, press Menu to enter the User Presets menu.
2. Press Next to go to the Save Preset menu.

   Rotate either front panel encoder to select the preset (1, 2, or 3) to save the current settings. Default setting is N/A.

3. Press Next to go to the Save Preset menu.

   Rotate either front panel encoder to select the preset to be erased (1, 2, or 3) Default setting is N/A.

4. Press Next to return to the User Preset menu.

NOTE *Press Menu to go directly to the next top level menu (Advanced Config).*

Recall a User Preset

1. Press the Esc button to clear all active menus and reset the LCD to default menu cycle.
2. Make an input tie to the desired scaler output to recall any one of the three saved presets, numbered 1 to 3.
3. Press the output button. The LCD displays the message shown below.

4. Press the output button to cycle through the saved output presets (1 to 3).

5. If no presets were saved previously, the following message is displayed.

Advanced Config

Within this submenu auto imaging can be turned on or off, top and bottom blanking area can be adjusted, and edge smoothing filter can be selected. In addition blue mode, auto memory, 2:2 pull down, and enhanced mode can all be turned on or off separately.

1. From the User Presets menu, press Menu to for the Advanced Config. submenu.
2. Press Next to go to the Auto Image menu. Auto Image can be turned on or off for any input from this menu. Default setting is off.

   Rotate the left front panel encoder (◄►) to select an input, or press the desired input button. Rotate the right encoder (▲▼) to turn Auto image on or off.

3. Press Next to go to the Top and Bottom Blanking menu. Within this menu the top and bottom blanking area (0-255) shown on the display output can be adjusted. Default setting is 000.

   Rotate the left front panel encoder (◄►) to adjust the top blanking value, and rotate the right encoder (▲▼) to adjust the bottom blanking value.

4. Press Next to go to the (encoder) Filter Mode menu. Filter Mode can be turned on or off from this menu. Default setting is on.

   Rotate either front panel encoder to tun the Filter mode off or on. When turned on, the filter reduces or eliminates anti-aliasing (the jail bar effect) and high frequency noise for digital displays. Set the filter to off for CRT displays.

5. Press Next to go to the Blue Mode menu. Blue Mode can be turned on or off from this menu. Default setting is off.

   Rotate either front panel encoder to tun the blue mode on or off. When turned on, only sync and the blue video signals are displayed.

6. Press Next to go to the Auto Memories menu. Auto Memories can be turned on or off from this menu. Default setting is on.

   Rotate either front panel encoder to tun the auto memory on or off

7. Press Next to go to the 2:2 pulldown menu. The pulldown detection feature can be turned off or on from this menu. If the input source is PAL video that originated in film, set the 2:2 pulldown to on. For standard PAL video sources (cameras, etc.), set it to off. Default setting is on.

NOTE *2:2 pulldown is not applicable for NTSC video sources, as film mode (3:2 pulldown) is automatically detected for those signals.*

9. Rotate either front panel encoder to tun the 2:2 pulldown mode off or on.

10. Press Next to go to the Enhanced Mode menu. The enhanced mode can be turned on or off from this menu. Default setting is off.

NOTE *Only S-video and composite video input signals support Enhanced mode.*

11. Rotate either front panel encoder to turn the enhanced mode on or off. When the mode is set to on, automatic gain control of the video signal is enabled.

12. Press Next to return to the Advanced Config. menu.

NOTE *Press Menu to go directly to the next top level menu (View Comm Settings).*

View Comm Settings menu

The fourth menu level, View Comm Settings is reached by pressing the Menu button four times from the default display cycle, or if at a different menu, by pressing the button repeatedly times until this menu is shown on the LCD screen.

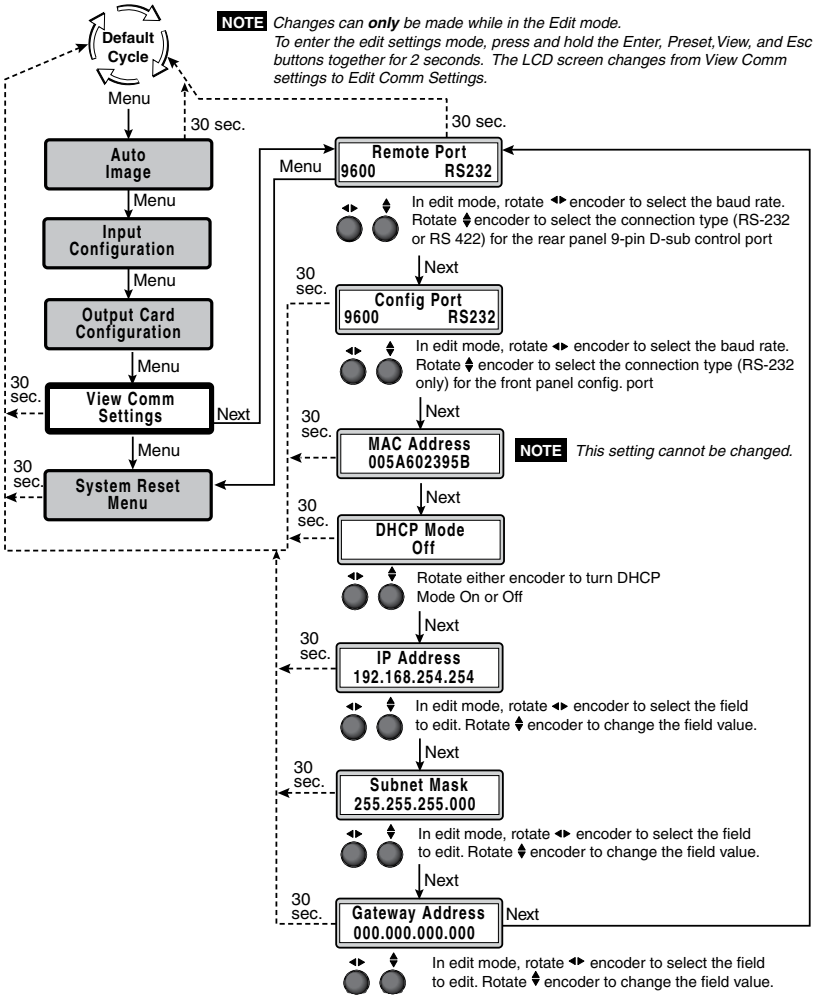


Figure 3-50 — View/Edit Comm Settings menu

This menu allows the user to view the following device communication settings: Remote port, Config. port, Mac address (view only), DHCP mode, IP address, Subnet mask, and Gateway address.

NOTE *These settings can only be changed when in the Edit Comm Settings menu. See "Editing the communications settings" section in this chapter for method.*

To simply **view** the Comm settings, do the following:

1. From the default cycle, press the Menu button four times to go to the View Comm Settings menu (see figure 3-50)
2. Press the Next button to enter the first sub level, Remote Port (rear panel).
3. To view the remaining settings, continue to press the Next button and navigate through each setting.
4. Press Next in the Gateway Address menu to return to the View Comm Settings.

NOTE *Press the Menu button to go directly to the next top level (System Reset) menu.*

Editing the communication settings

To edit the communication settings, do the following:

NOTE *The hardware address (the MAC address) is hard coded and cannot be changed. In edit mode the MAC addresss menu is not displayed.*

1. Press the Enter, Preset, View, and Esc buttons at the same time, and hold down for 2 seconds. The LCD displays the Edit Comm Settings menu.
2. Press the Next button to enter the first sub level, Remote Port.
3. Rotate the left front panel encoder (◄►) to adjust the baud rate (9600, 19200, 38400, or 115200), and rotate the right encoder (▲▼) to select the connection type (RS-232/RS-422).
4. Press Next to go to the front panel's Config Port menu.
5. Rotate the left front panel encoder (◄►) to adjust the baud rate (9600, 19200, 38400, or 115200), and rotate the right encoder (▲▼) to select the connection type (RS-232).

NOTE *The hardware address (the MAC address) is hard coded and cannot be changed. In edit mode the MAC addresss menu is not displayed.*

6. Press Next to go to the DHCP Mode menu. From this menu, DHCP (Dynamic Host Configuration Protocol) can be turned on or off. Default setting is off.
7. Rotate either front panel encoder to turn the DHCP mode on or off.
8. Press Next to go to the IP Address menu. In this menu the IP address of the ISM 824 multiswitcher can be changed as desired. Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per field, are optional. Values of 256 and above are invalid. The default IP address is 198.162.254.254.
9. Rotate the left front panel encoder (◄►) to select the field to be changed (the field value flashes when selected), then rotate the right encoder (▲▼) to change the field values.
10. Press Next to go to the Subnet Mask menu. In this menu the Subnet mask of the ISM 824 multiswitcher can be changed as desired. The default is 255.255.000.000
11. Rotate the left front panel encoder (◄►) to select the field to be changed, then rotate the right encoder (▲▼) to change the field values.
12. Press Next to go to the Gateway Address menu. In this menu the Gateway address of the ISM 824 multiswitcher can be changed as desired. The default is 000.000.000.000
13. Rotate the left front panel encoder (◄►) to select the field to be changed, then rotate the right encoder (▲▼) to change the field values.
14. Press Next to return to the upper level Edit Comm Settings menu.

NOTE *Press the Menu button to go directly to the next top level (System Reset) menu.*

System Reset Menu

This fifth menu level is reached by pressing the Menu button five times from the default display cycle, or until the System Reset menu is shown in on the LCD screen. Use this menu to reset the ISM and any installed output cards to default values. All existing ties are broken.

To reset the ISM 824 system do the following:

1. Press the Next button. The LCD displays "Press DETAIL to reset", and the Detail button flashes (see figure 3-51).

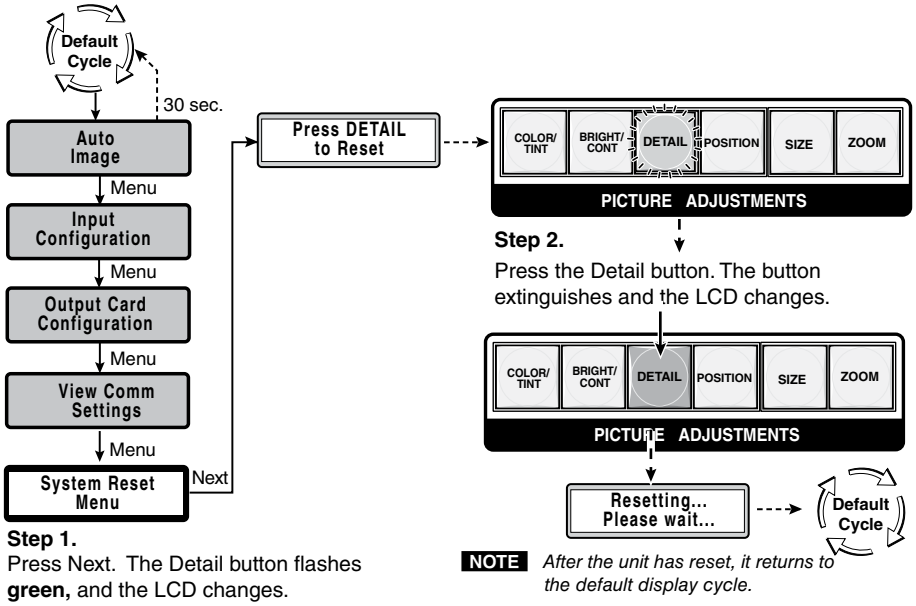


Figure 3-51 — System Reset menu and operation

2. Press the Detail button. The button extinguishes, and the LCD displays "Resetting...Please wait...". When resetting is complete the ISM reverts to the default display cycle.

Exit menu

The final menu level is reached by pressing the Menu button six times from the default display cycle, or until the menu is shown in on the LCD screen. Use this menu to exit from the device Menu's and revert the to the display cycle.

From the Exit menu (figure 3-52), press the Next button to return to the default display cycle, or press the Menu button to go to the Auto Image menu.

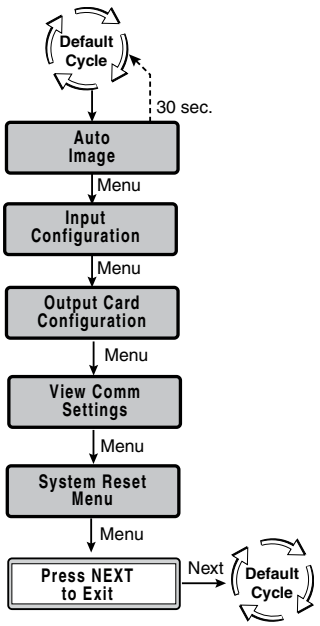


Figure 3-52 — Exit menu flowchart

Resetting the Unit with the Reset Button

There are four reset modes (numbered 1, 3, 4, and 5 for the sake of comparison with Extron IPL products) that you can access by pressing the Reset button on the rear panel. The Reset button is recessed, so use a pointed stylus, ballpoint pen, or Extron Tweeker to press it. See the table below for a summary of the reset modes.

CAUTION *Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.*

NOTE *The reset modes listed in the table close all open IP and Telnet connections and close all sockets. Also, each mode is a separate function, not a continuation from mode 1 to mode 5.*

Reset Mode Comparison Summary

Mode	Activation	Result	Notes
1	Hold down the recessed Reset button while applying power to the unit	Mode 1 causes the ISM 824 to revert to the factory default firmware. Event scripting does not start if the unit is powered on in this mode. All user files and settings (drivers, audio adjustments, IP settings, etc.) are maintained.	Use mode 1 to remove a version of firmware if incompatibility issues arise.
3	Hold down the Reset button for about 3 seconds, until the Reset LED blinks once. Then, within 1 second, press Reset again briefly (for less than 1 second).	Mode 3 turns events on or off. During resetting, the Reset LED flashes 2 times if events are starting; 3 times if events are stopping.	Events must be turned on if you want to change IP settings or scheduling.
4	Hold down the Reset button for about 6 seconds, until the Reset LED has blinked twice (once at 3 seconds, once at 6 seconds). Then, within 1 second, press Reset briefly (for less than 1 second).	Mode 4 does the following: • Enables ARP capability. • Sets the IP address back to factory default. • Sets the subnet back to factory default. • Sets the default gateway address back to the factory default. • Sets port mapping back to factory default. • Turns DHCP off. • Turns all events off. The Reset LED flashes 4 times in quick succession during reset	Mode 4 enables you to set IP address information using ARP and the MAC address.
5	Hold down the Reset button for about 9 seconds, until the Reset LED has blinked three times (once at 3 seconds, once at 6 sec., once at 9 seconds). Then, within 1 second, press Reset briefly (for less than 1 second).	Mode 5 performs a complete reset to factory defaults (except the firmware). • Does everything mode 4 does. • Resets everything that was set via the Real Time Adjustments part of the control program: all video settings and miscellaneous options. • Resets all IP options. • Removes/clears all files from the processor. The Reset LED flashes 4 times in quick succession during the reset.	Mode 5 is useful if you want to start over with control software configuration and uploading, and to replace events.

Chapter Four

SIS™ Programming and Control

RS-232/RS-422 Link

The switcher's rear panel Remote 9-pin D female connector (figure 4-1) can be connected to the RS-232/RS-422 serial port output of a host device such as a computer running the HyperTerminal utility or a control system. This connection makes software control of the switcher possible.

Pin	RS-232	Function	RS-422	Function
1	—	Not used	—	Not used
2	TX	Transmit data	TX	Transmit data (-)
3	RX	Receive data	RX	Receive data (-)
4	—	Not used	—	Not used
5	Gnd	Signal ground	Gnd	Signal ground
6	—	Not used	—	Not used
7	—	Not used	RX+	Receive data (+)
8	—	Not used	TX+	Transmit data (+)
9	—	Not used	—	Not used

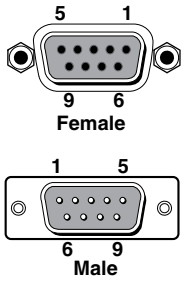


Figure 4-1 — Remote connector pin arrangement

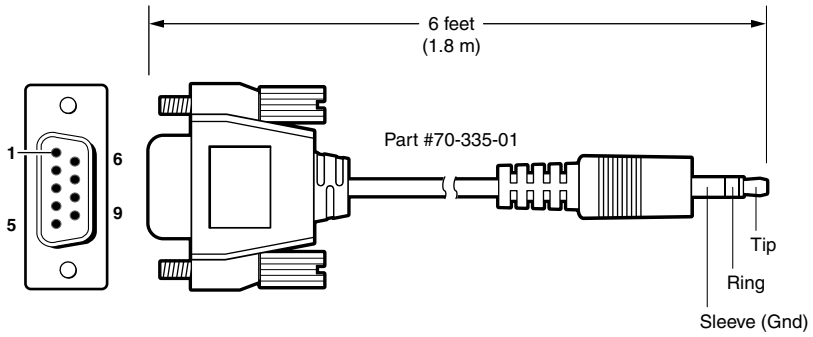
The protocol is 9600 baud, 8-bit, 1 stop bit, no parity, and no flow control.

Front Panel Configuration Port

NOTE *This port is hardwired for RS-232 only.*

NOTE *This port is independent of the rear panel RS-232/RS-422 port. A front panel Configuration port connection and a rear panel RS-232/RS-422 port connection can both be active at the same time.*

The optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part **#70-335-01** (figure 4-2) can be used for connection to the Configuration port.

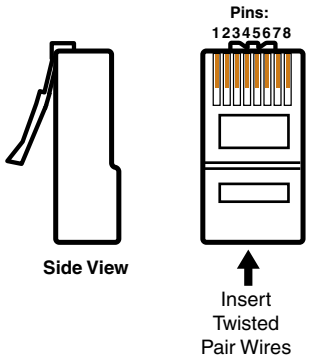


9-pin D	Connection	TRS Plug
Pin 2	Computer's RX line	Tip
Pin 3	Computer's TX line	Ring
Pin 5	Computer's signal ground	Sleeve

Figure 4-2 — Optional 9-pin TRS RS-232 cable

Ethernet Link

The rear panel Ethernet connector on the switcher (figure 4-3) can be connected to an Ethernet LAN or WAN. This connection makes SIS control of the switcher possible using a computer connected to the same LAN or WAN.



Straight-through Cable
(for connection to a switch, hub, or router)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

Crossover Cable
(for direct connection to a PC)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

Figure 4-3 — RJ-45 connector pinout table

Ethernet connection

The cable can be terminated as either a patch cable or a crossover cable (figure 4-3) and must be properly terminated for your application:

- **Patch (straight) cable** — Connection of the ISM to an Ethernet hub, router, or switcher that also hosts a controlling computer
- **Crossover cable** — Direct connection between the ISM and a computer

Default address

To access the switcher via the LAN port, you need the switcher's IP address. If the address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the front panel (see "View Comm Settings menu" in chapter 3, "Operation and Setup") or the Ping utility (see "Ping to determine the switcher's IP address" or "Ping to determine Extron IP address" in appendix A, "Ethernet Connection", for more details). If the address has not been changed, the factory-specified default is 192.168.254.254.

Symbols

Symbols (Xn values), defined on page 4-4, are used throughout the discussions of the switcher-initiated messages that begin on the next page and the command/response table that begins on page 4-8. The symbols represent variables in the switcher-initiated messages and the command/response table fields.

ISM 824 specific symbol definitions

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)

← = CR (no line feed)

• = Space

| = Pipe (vertical bar) character

Esc = Escape key

X1 = Input number 1 through 8
X1 = 0 to untie only
For picture controls, X1 = 1 to 8

X2 = Output selection (1 to 8)

X3 = Input Video format:

1 = RGB
2 = YUV-HD
3 = YUVp
4 = YUVi
5 = S-video
6 = Composite

X4 = Horizontal start (0 to 255)

X5 = Vertical start
(0 to 31 or 0 to 255, depends on the input format)

X6 = Pixel sampling phase (0 to 31)

X7 = Total pixels
(Range depends on the input resolution ± 128)

X8 = Active pixels
(Range depends on the input resolution ± 128)

X9 = Active lines
(Range depends on the input resolution ± 128)

X10 = 0 = off, or 1 = on

X11 = Input signal standard (0 through 4)

0 = none
1 = YUVi (50 Hz)
2 = YUVi (60 Hz)
3 = NTSC 3.58
4 = NTSC 4.43
5 = SECAM
6 = PAL
- = Not applicable

X12 = Internal temperature (in degrees Fahrenheit)

X15 = Picture adjustment (0 to 255)

X16 = Horizontal/Vertical position
(zero location is 2048, limits are ± 2047)

X17 = Horizontal and Vertical size (1 to 4095)

X20 = Test pattern type

0 = Off
1 = Color Bars
2 = 4:3/16:9 crosshatch
3 = 4x4 crosshatch
4 = Gray scale
5 = Ramp
6 = Alternating pixels
7 = Crop
8 = 4.:3/16:9 Film aspect ratio 1.33
9 = 4.:3/16:9 Film aspect ratio 1.78
10 = 4.:3/16:9 Film aspect ratio 1.85
11 = 4.:3/16:9 Film aspect ration 2.35

X21 = Output resolution (Universal Scaler):

01 = 640x480
02 = 800x600
03 = 852x480
04 = 1024x768
05 = 1024x852
06 = 1024x1024
07 = 1280x768
08 = 1280x1024
09 = 1360x765
10 = 1365x768
11 = 1366x768
12 = 1365x1024
13 = 1400x1050
14 = 1600x1200
15 = 480p
16 = 576p
17 = 720p
18 = 1080i
19 = 1080p

X21 = Output resolution (Video Scaler):

01 = 640x480
02 = 800x600
03 = 852x480
04 = 1024x768
07 = 1280x768
08 = 1280x1024
09 = 1360x765
10 = 1365x768
11 = 1366x768
12 = 1365x1024
13 = 1400x1050
15 = 480p
16 = 576p
17 = 720p
18 = 1080i
19 = 1080p

X22 = Output refresh rate (Universal Scaler):

1 = 50 Hz
2 = 60 Hz
3 = 72 Hz
4 = 96 Hz
5 = 100 Hz
6 = 120 Hz

X22 = Output refresh rate (Video Scaler):

1 = 50 Hz
1 = 60 Hz

X24 = Output sync format:

0 = RGBHV (default)
1 = RGBS
2 = RGsB
3 = Y, R-Y, B-Y bi-level
4 = Y, R-Y, B-Y tri-level (Universal Scaler only)

X25 = User presets (1 to 3)

X26 = Input preset (1 to 128)

X29 = Auto Image (0 to 2)

X31 = Audio level adjustment range (-18 to +24)

X32 = Audio gain adjustment range (0 to 24)

X33 = Audio attenuation adjustment range (-18 to 0)

X34 = Volume adjustment range (0 - 64)

X37 = RGB delay duration
00 to 50 in 0.1 second increments (0.0 second to 5.0 seconds)

X44 = Encoder level (0 to 3)

X45 = Group # (for I/O grouping)

0 = no group
1 through 4 = Group #

X47 = Output board status

0 = Not present
1 = Present (working)
2 = Present (not working)

X48 = Sync frequency xxx.xx
(in Hz for vertical, kHz for Horizontal)

X49 = I/O presets (1 to 16), when viewing current tie

X50 = Card slot (1 to 4)

X51 = Video/Audio mute:

0 = No Mutes
1 = Video mute
2 = Audio Mute
3 = Video and Audio Mute

X54 = Zoom parameter

Switcher-Initiated Messages

When a local event such as power-up or a front panel operation occurs, the switcher responds by sending a message to the host. The switcher-initiated messages are listed below and on the following pages.

The switcher does not expect a response from the host, but the host program may request a new status.

Power-up

© Copyright 2007, Extron Electronics, ISM 824 series, V x.xx, 60-787-01 ↵

The copyright message is initiated by the switcher when it is first powered on. V*x.xx* is the firmware version number.

Input selection

Qik↵

A front panel video and audio switching operation has occurred.

Input and output video type

Typ X1 * X3↵

A front panel input video type selection has occurred. X1 is the input number and X3 is the input video type.

RteX2 * X21 * X22↵

A front panel output video format selection has occurred. X21 is the output resolution and X22 is the output refresh rate.

X2SynX24↵

A front panel output video type selection has occurred. X24 is the output video format (RGBHV, RGBS, RGsB, Y, R-Y bi-level, Y, R-Y, B-Y tri-level).

X2PolX53↵

A front panel output polarity selection has occurred. X53 is the output sync polarity.

Picture adjustments

X2ColX1 *X15↵

A front panel color adjustment has occurred. X2 is the output switched to the adjusted input X1 and X15 is the color variable.

X2TinX1 *X15↵

A front panel tint adjustment has occurred. X2 is the output switched to the adjusted input X1 and X15 is the tint variable.

X2BrtX1 *X15↵

A front panel color brightness adjustment has occurred. X2 is the output switched to the adjusted input X1 and X15 is the brightness variable.

X2ConX1 *X15↵

A front panel contrast adjustment has occurred. X2 is the output switched to the adjusted input X1 and X15 is the contrast variable.

X2HszX1 *X17↵

A front panel horizontal size adjustment has occurred. X2 is the output and X17 is the size variable.

X2 Vsz X1 *X17 ↵

A front panel vertical size adjustment has occurred. X1 is the input, X2 is the output, and X17 is the size variable.

X2 Hph X1 *X16 ↵

A front panel horizontal centering adjustment has occurred. X1 is the input, X2 is the output, and X16 is the centering variable.

X2 Vph X1 *X16 ↵

A front panel vertical centering adjustment has occurred. X1 is the input, X2 is the output, and X16 is the centering variable.

X2 Phs X1 * X6 ↵

A front panel pixel phase adjustment has occurred. X1 is the input, X2 is the output, and X6 is the pixel phase variable.

X2 Det X1 *X15 ↵

A front panel horizontal detail filter adjustment has occurred on the input X1 switched to output X2. X15 is the filter variable (1 to 255 for Universal Scaler; 1 to 63 for Video Scaler).

X2 Blu X10 ↵

The blue-only mode has been turned on or off from the front panel for one or both outputs. X10 is the on/off status for the two outputs.

RGB delay

X2 Dly X37 ↵

A front panel RGB delay adjustment has occurred. RGB delay affects input selections for the preview output only. X37 is the delay value, in 0.1 second steps, X2 is the output. X37 can be as much as 50 = 5.0 seconds.

Test pattern

X2 Tst X20 ↵

A test pattern has been turned on or off from the front panel for one or both outputs. X20 is the test pattern selected, X2 is the output.

Audio gain and attenuation

In X1 • Aud X31 ↵

A front panel audio input level adjustment has occurred. X1 is input, and X31 is the audio gain or attenuation level.

Auto Image

X2 Img X1 * X10 ↵

The Auto Image feature has been turned on or off from the front panel for all input selections. X1 is input, X2 is the output, and X10 is the on/off status.

Auto Memory

X2 Aut X10 ↵

The auto memory feature has been turned on or off from the front panel for all input selections. X10 is the on/off status, X2 is the output.

Reconfig

Reconfig X2 ↵

The input to output X2 has changed.

Host-to-Switcher Instructions

The multiswitcher accepts SIS commands through its serial ports and/or its LAN port. SIS commands consist of one or more characters per command field. They do not require any special characters to begin or end the command character sequence. Each multiswitcher response to an SIS command ends with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Switcher Error Responses

When the ISM 824 receives an SIS command and determines that it is valid, it performs the command and sends a response to the host device. If the multiswitcher is unable to perform the command because the command is invalid or contains invalid parameters, the multiswitcher returns an error response to the host. The error response codes are:

E01 — Invalid input number
E09 — Invalid preset number
E12 — Invalid output number
E13 — Invalid parameter
E14 — Not valid for this configuration
E17 — Illegal command for this signal type
E22 — Busy
E24 — Privilege violation
E25 — Device not present
E26 — Maximum number of connections exceeded
E27 — Invalid event number
E28 — Bad filename/file not found
E30 — Hardware failure (followed by colon (:) and descriptor #
E31 — Attempt to break port pass-thru when not set

Using the Command/Response Tables

The command/response table begins on the next page. Except for the gain and attenuation settings and the filter settings, upper or lowercase letters are acceptable in the command field. The table below shows the hexadecimal equivalent of each ASCII command.

ASCII to HEX Conversion Table										Esc	1B	CR	ØD	LF	ØA
	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

NOTE *With the exception of the audio gain and attenuation (G and g) and horizontal and vertical filtering (D and d) commands, the SIS commands are **not** case sensitive.*

Command/Response Table for SIS Commands

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Input Selection				
Video and Audio	X1 *X2!	X1 %2A X2!	Out X2 • In X1 • All ↵	Select video and audio input X1 to output X2.
Example:	4*2!	4*2!	Out2 • In4 • All ↵	Input 4 video and audio selected to output 2.
Video	X1*X2&	X1 %2A X2&	Out X2 • In X1 • RGB ↵	Select video input X1 to output X2.
Example:	5*2&	5*2&	Out2 • In5 • RGB ↵	Input 5 video only selected to output 2.
Audio	X1*X2$	X1 %2A X2$	Out X2 • In X1 • Aud ↵	Select audio input X1 to the X2 output.
Example	3*7$	3*7$	Out7 • In3 • Aud ↵	Input 3 audio only selected to output 7.
Untie Selection				
Video and Audio	0 *X2!	0%2A X2!	Out X2 • In 0 • All ↵	Untie all video and audio inputs tied to output X2.
Example:	0*4!	0*4!	Out4 • In 0 • All ↵	Untie all video and audio inputs tied to output 4.
Video	0 *X2&	0%2A X2&	Out X2 • In 0 • RGB ↵	Untie all video inputs to output X2.
Example:	0*5&	0*5&	Out5 • In 0 • RGB ↵	Untie all video inputs to output 5.
Audio	0 *X2$	0%2A X2$	Out X2 • In 0 • Aud ↵	Untie all audio inputs to output X2.
Example:	0*3$	0*3$	Out3 • In 0 • Aud ↵	Untie all audio inputs to output 3.
Multiple quick ties				
Quick tie	Esc + Q X1*X2!X1* X2 !... X1* X2! ←		Qik ↵	Quick tie multiple inputs to multiple outputs.
Example:	Esc + Q 2*4! 3 *6!...1*7! ←		Qik ↵	Quick tie inputs 2, 3, and 1 to outputs 4, 6, and 7.
Tie an input to all outputs				
Tie a video and audio input	X1 *!	X1 %2A!	In X1 • All ↵	Tie input X1 video and audio to all outputs.
Example:	3 *!	X3 %2A!	In X3 • All ↵	Tie input 3 video and audio to all outputs.
Tie a video input only	X1 *&	X1 %2A&	In X1 • RGB ↵	Tie input X1 video to all outputs.
Tie an audio input only	X1 *$	X1 %2A$	In X1 • Aud ↵	Tie input X1 audio to all outputs.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Read ties				
View video output tie	X2 &	X2 &	X1↵	View video input tied to output X2.
Example:	6 &	6 &	3↵	Shows the video input tied to output 6 as being input 3.
View audio output tie	X2 $	X2 $	X1↵	View audio input tied to output X2.
Example:	6 $	6 $	4↵	Shows the audio input tied to output 6 as being input 4.
Input video type				
Set video type	X1*X3\	X1 %2AX3\	TypX1*X3↵	Set input X1 to format X3.
View video type	X1\	X1\	X3↵	View video type of input X1.
I/O presets (Matrix tie)				
Recall presets	X49 .	X49 .	RprX49↵	Recalls I/O preset X49.
Save preset	X49 ,	X49 ,	SprX49↵	Saves I/O preset X49.
I/O grouping				
Write input grouping	EscX45[1] X45[2]....X45[8]I←		GriX45[1] X45[2]....X45[8]↵	Each X45 entry is the group number assigend to an input position, starting from input 1, 8 is the maximum input.
Example:	Esc40333040I←		see below	Input 1 in Group 4, Input 2 not grouped, Input 3 in Group 3..... Input 7 in Group 4, Input 8 not grouped.
Write output grouping	EscX45[1] X45[2]....X45[8]O←		GroX45[1] X45[2]....X45[8]↵	Each X45 entry is the group number assigned to an output position, starting from output 1, 8 is the maximum output.
Read input grouping	EscI←		X45[1] X45[2] X45[3]....X45[8]↵	One X45 entry for each input, starting from input 1, 8 is the maximum number of inputs.
Example:	EscI←		see below	

Inputs 1 and 7 in group 4
Input 2, 6, and 8 not grouped
Response #s = group: Gri 4 0 3 3 3 0 4 0 ↵
Input: 01 02 03 04 05 06 07 08
Inputs 3, 4, and 5 in group 3

Inputs 1,3,4, 5 and 7 in group 3
Input 2, 6, and 8 not grouped
Response #s = group: 3 0 3 3 3 0 3 0 ↵
Input: 01 02 03 04 05 06 07 08

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Read output grouping	Esc O ↵		X45[1] X45[2] X45[3]....X45[8] ↵	One X45 entry for each output, starting from output 1, 8 is the maximum output.
	NOTE *The group assigned X45 must be 1, 2, 3, 4, or 0 (not grouped)*			
Video mute				
Enable blanking	X2*1B	X2%2A 1B	X2Vmt1↵	Blanks selected output.
Disable blanking	X2*0B	X2%2A 0B	X2Vmt0↵	Displays selected output.
View	X2B	X2B	X10↵	View the blanking status.
Audio mute				
Mute on	X2*1Z	X2%2A 1Z	X2Amt1↵	Mute selected output.
Mute off	X2*0Z	X2%2A 0Z	X2Amt0↵	Unmute selected output.
View	X2Z	X2Z	X10↵	View mute status.
Volume control				
Specific vlume	X2*X34V	X2%2A X34V	OutX2*VolX34↵	Set volume to X34 for output X2.
Increment	X2+V	X2+V	OutX2*VolX34↵	Increase volume.
Decrement	X2-V	X2-V	OutX2*VolX34↵	Decrease volume.
View	X2V	X2V	X34↵	View current volume setting.
RGB delay time				
Delay on	3*X2*X37#	3%2AX2%2AX37#	X2DlyX37↵	Set RGB delay.
View setting	3*X2#	3%2AX2#	X37↵	View RGB delay setting.
Audio gain and attenuation				
Specific gain	X1*X32G	X1 %2A X32G	InX1•AudX31↵	Set input X1 gain to X31.
Set attenuation	X1*X33g	X1 %2A X33g	InX1•AudX31↵	Set input X1 attenuation to X33.
Increment	X1+G/g	X1+G/g	InX1•AudX31↵	Increase input X1 audio level to X31.
Decrement	X1-G/g	X1-G/g	InX1•AudX31↵	Lower input X1 audio level to X31.
View	X1G/g	X1G/g	X31↵	View audio level of input X1.
Global video mute				
Global RGB mute	1*B	1%2A B	0Vmt1↵	Mute all video outputs.
Global RGB unmute	0*B	0%2A B	0Vmt0↵	Unmute all video outputs.
Global audio mute				
Global audio mute	1*Z	1%2A Z	0Amt1↵	Mute all audio outputs.
Global audio unmute	0*Z	0%2A Z	0Amt0↵	Unmute all audio outputs.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
View output mutes				
View output mutes	Esc VM ←	W VM |	X51 X51 X51 X51 ... ↵	X51 shows the mute status of each output.
View output mutes (verbose on)				
View output mutes	Esc VM ←	W VM |	Mut X51 X51 X51 X51 ... ↵	X51 shows the mute status of each output.
View video global presets configuration				
View video preset configuration	Esc X49*1*1VC←	W X49 %2A1 %2A1 VC|	X1 • X1 • X1 ...Vid ↵	Show preset X49's video configuration. Show the video input tie to 16 sequential outputs, staring from output 1.
View video global presets configuration (verbose 2/3)				
View video preset configuration	Esc X49*1*1VC←	W X49 %2A1 %2A1 VC|	Vgp X49•Out*X1 • X1 • X1... Vid ↵	Show preset X49's video configuration. Show the video input tie to 16 sequential outputs, staring from output 1.
Example:	Esc 3*1*1VC	W3*1*1VC	00 00 00 00 02 00 02 02.....Vid	Gives preset #3's video configuration (here input 2 tied to outputs 5, 7, and 8).
View audio global presets configuration				
View audio preset configuration	Esc X49*1*2VC←	W X49 %2A1 %2A2 VC|	X1 • X1 • X1 ... Aud ↵	Show preset X49's audio configuration. Show the audio input tie to 16 sequential outputs, starting from output 1.
View audio global presets configuration (verbose 2/3)				
View audio preset configuration	Esc X49*1*2VC←	W X49 %2A1 %2A2 VC|	Vgp OutX49*X1 • X1 • X1 ... Aud ↵	Show preset X49's audio configuration. Show the audio input tie to 16 sequential outputs, starting from output 1.
Example:	Esc 1*1*2VC	W1*1*2VC	00 00 00 01 01 00 01 01.....Aud	Gives preset #1's audio configuration (here input 1 tied to outputs 4, 5, 7, and 8)

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Names				
NOTE *Name 12 characters maximum for global preset, input, and output names. Uper- and lower-case alphanumeric characters and _ : = / and spaces are valid. The following characters are invalid in the name: {space} ~ , @ = ' [ ]{ } < > ' " : ; | \ and ?.*				
Name global (I/O) preset	Esc X49,name NG←	W X49, name NG|	Nmg X49, name↵	Name the preset.
Read global (I/O) preset	Esc X49 NG←	W X49 NG|	name↵	Show reset name.
Write input	Esc X1,name NI←	W X1, name NI|	Nmi X1, name↵	Write the input name.
Read input	Esc X1 NI←	W X1 NI|	name↵	Read the input name.
Write output	Esc X2,name NO←	W X49, name NO|	Nmo X2, name↵	Write the output name.
Read output	Esc X2 NO←	W X49 NO|	name↵	Read the output name.
Start auto image				
Start auto image	14*X2 #	14%2A X2 #	Img X2↵	Auto image input tied to output X2.
Information request **With verbose 2/3 activated**				
General information	I/i	I/i	Inf X!•X!•X!•X! •X!•X!•X!•X!↵	Query the configuration of all outputs (listed 1-8).
Query part number	N/n	N/n	Pno60-787-01↵	View the part number (based unit).
Query part number for slots	*N/n	*N/n	Pno60-787-01.X! X! X! X!↵	View the part number (slot population from slot 1-4).

Where: X! = Output (card) type

A = Universal scaler
B = Video-only scaler
C = Single-output wideband
D =Dual-output wideband
E = Scan converter
X = No output present
Z = Internal wideband output (outputs 1 and 2)

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Query firmware version	Q/q	Q/q	Ver01*x.xx↵	View the firmware version.
View internal temperature	7S	7S	Sts7 X12↵	Internal temperature in degrees Fahrenheit.
Digital sync validation processing (DVSP)	X1 LS	X1 LS	X48,X48↵	Listed as horizontal and vertical frequencies.
View input video standard	38 *X1#	21 %2A X1 #	Ist X1* X11↵	View setting.
With verbose 2/3 not activated				
General information	I/i	I/i	X!•X!•X!•X!•X!•X!•X!•X!↵	Query the configuration of all outputs (listed 1-8).
Query part number	N/n	N/n	60-787-01↵	View the part number (based unit).
Query part number for slots	*N/n	*N/n	60-787-01.X! X! X! X!↵	View the part number (slot population from slot 1-4).
Where: X! = Output (card) type A = Universal scaler B = Video-only scaler C = Single-output wideband D =Dual-output wideband E = Scan converter X = No output present Z = Internal wideband output (outputs 1 and 2)				
Query firmware version	Q/q	Q/q	x.xxx↵	View the firmware version.
View internal temperature	7S	7S	Sts 7 X19↵	Internal temperature in degrees Fahrenheit.
View input video standard	38 *X1#	38 %2A X1 #	X11↵	View setting.
Others:				
Front panel lockout (executive mode)				
Enable lockout	1X	1X	Exe1↵	Lock front panel (admin).
Enable Admin lockout	2X	2X	Exe2↵	Lock front panel (complete).
Disable lockout	0X	0X	Exe0↵	Unlock front panel.
View lockout status	X	X	x!↵	Show executive mode status x! = 0 (off), 1 (view only), or 2 (I/O ties only).

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Resets				
Reset an individual I/O preset	Esc X49ZG↵	WX49 ZG|	ZpgX49↵	Clear global I/O preset X49.
Reset all I/O presets	Esc ZG↵	WZG|	Zpg00↵	Clear all global I/O preset.
Reset audio input levels	Esc ZA↵	W ZA|	Zpa↵	Reset all audio input levels (gain and attenuation) to 0 dB.
Reset all mutes	Esc ZZ↵	WZZ|	Zpz↵	Reset all video and audio mutes.
System reset	Esc ZXXX↵	W ZXXX|	Zpx↵	Reset factory defaults.
Individual board reset	Esc X50 ZX↵	W X50 ZX|	ZpxX50↵	Reset individual card.
Universal Scaler (ISM RGB) Output				
Input sampling				
Horizontal start				
Specify a value	X2*X4)	X2%2AX4)	X2HstX1*X4↵	Specify the horizontal location of first active pixel.
Increment value	X2+)	X2+)	X2HstX1*X4↵	Increase the value.
Decrement value	X2-)	X2-)	X2HstX1*X4↵	Decrease the value.
View	X2)	X2)	X4↵	Show the horizontal location of first active pixel.
Vertical start				
Specify a value	X2*X5 (	X2%2AX5 (	X2VstX1*X5↵	Specify the vertical location of first active line.
Increment value	X2+(	X2+(	X2VstX1*X5↵	Increase the value.
Decrement value	X2-(	X2-(	X2VstX1*X5↵	Decrease the value.
View	X2(	X2(	X5↵	Show the vertical location of first active line.
Pixel phase (available only for RGB, YUV-HD, and YUVp input signals)				
Specify a value	X2*X6 U	X2%2AX6 U	X2PhsX1*X6↵	Adjust the pixel phase to a specified value.
Increment value	X2+U	X2+U	X2PhsX1*X6↵	Increase the value.
Decrement value	X2-U	X2-U	X2PhsX1*X6↵	Decrease the value.
View	X2U	X2U	X6↵	Show the pixel phase.
Total pixels (available only for RGB, YUV-HD, and YUVp input signals)				
Specify a value	11*X2*X7 #	11%2AX2%2AX7 #	X2TpxX1*X7↵	Adjust the total pixels to a specified value.
Increment value	11*X2+#	11%2AX2+#	X2TpxX1*X7↵	Increase the value.
Decrement value	11*X2-#	11%2AX2-#	X2TpxX1*X7↵	Decrease the value.
View	11*X2#	11%2AX2#	X7↵	Show the total pixels.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Active pixels				
Specify a value	12*X2*X8 #	12%2AX2%2AX8 #	X2ApxX1*X8↵	Adjust the active pixels to a specified value.
Increment value	12*X2+#	12%2AX2+#	X2ApxX1*X8↵	Increase the value.
Decrement value	12*X2-#	12%2AX2-#	X2ApxX1*X8↵	Decrease the value.
View	12*X2#	12%2AX2#	X8↵	Show the active pixels.
Active lines				
Specify a value	13*X2*X9 #	13%2AX2%2AX9 #	X2AlnX1*X9↵	Adjust the active lines to a specified value.
Increment value	13*X2+#	13%2AX2+#	X2AlnX1*X9↵	Increase the value.
Decrement value	13*X2-#	13%2AX2-#	X2AlnX1*X9↵	Decrease the value.
View	13*X2#	13%2AX2#	X9↵	Show the active lines.
Input aspect ratio				
16:9	9*X2*1#	9%2AX2%2A1#	X2Asp X5*1↵	Set input aspect ratio 16:9.
4:3	9*X2*0#	9%2AX2%2A0#	X2Asp X1*0↵	Set input aspect ratio 4:3.
View	9*X2#	9%2AX2#	X10↵	View the current aspect ratio setting.
Picture adjustments				
Video mute				
Enable blanking	X2*1B	X2%2A 1B	X2Vmt1↵	Blanks selected output.
Disable blanking	X2*0B	X2%2A 0B	X2Vmt0↵	Displays selected output.
View	X2B	X2B	X10↵	View the blanking status.
Color				
Specify a value	X2*X15C	X2%2AX15 C	X2ColX1*X15↵	Sets color level to X15.
Increment value	X2+C	X2+C	X2ColX1*X15↵	Increase color level.
Decrement value	X2-C	X2-C	X2ColX1*X15↵	Decrease color level.
View	X2C	X2C	X15↵	View current setting.
Tint				
Specify a value	X2*X15T	X2%2AX15 T	X2TinX1*X15↵	Sets tint level to X15.
Increment value	X2+T	X2+T	X2TinX1*X15↵	Increase tint level.
Decrement value	X2-T	X2-T	X2TinX1*X15↵	Decrease tint level.
View	X2T	X2T	X15↵	View current setting.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Contrast				
Specify a value	X2*X15^	X2%2AX15 ^	X2ConX1*X15↵	Sets contrast level to X15.
Increment value	X2+^	X2+^	X2ConX1*X15↵	Increase contrast level.
Decrement value	X2-^	X2-^	X2ConX1*X15↵	Decrease contrast level.
View	X2^	X2^	X15↵	View current setting.
Brightness				
Specify a value	X2*X15Y	X2%2AX15 Y	X2BrtX1*X15↵	Sets brightness level to X15.
Increment value	X2+Y	X2+Y	X2BrtX1*X15↵	Increase brightness level.
Decrement value	X2-Y	X2-Y	X2BrtX1*X15↵	Decrease brightness level.
View	X2Y	X2Y	X15↵	View current setting.
Detail filter				
Set detail level	X2*X15D	X2%2AX15 D	X2DetX1*X15↵	Sets detail level to X15.
Increment value	X2+D	X2+D	X2DetX1*X15↵	Increase detail level.
Decrement value	X2-D	X2-D	X2DetX1*X15↵	Decrease detail level.
View detail value	X2D	X2D	X15↵	View the detail setting.
Horizontal position				
Specific value	X2*X16H	X2%2AX16 H	X2HphX1*X16↵	Sets horizontal centering to X16.
Increment value	X2+H	X2+H	X2HphX1*X16↵	Shift window right.
Decrement value	X2-H	X2-H	X2HphX1*X16↵	Shift window left.
View	X2H	X2H	X16↵	Show horizontal centering value (is X16).
Vertical position				
Specific value	X2*X16/	X2%2AX16 /	X2VphX1*X16↵	Sets vertical centering to X16.
Increment value	X2+/	X2+/	X2VphX1*X16↵	Shift window up.
Decrement value	X2-/	X2-/	X2VphX1*X16↵	Shift window down.
View	X2/	X2/	X16↵	Show vertical centering value (is X16).
Horizontal size				
Specific value	X2*X17:	X2%2AX17 :	X2HszX1*X17↵	Sets horizontal centering to X17.
Increment value	X2+:	X2+:	X2HszX1*X17↵	Widen the window.
Decrement value	X2-:	X2-:	X2HszX1*X17↵	Make the window narrower.
View	X2:	X2:	X17↵	Show horizontal sizing value (is X17).

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Vertical size				
Specific value	X2*X17;	X2%2AX16 ;	X2VszX1*X17↵	Sets vertical sizing to X17.
Increment value	X2+;	X2+;	X2VszX1*X17↵	Make the window taller.
Decrement value	X2-;	X2-;	X2VszX1*X17↵	Make the window shorter.
View	X2;	X2;	X17↵	Show vertical sizing value (is X16).
Zoom mode				
Zoom in	X2+{	X2+{	X2ZomX1*X54*X17*X17↵	Zoom in, making the window larger.
Zoom out	X2-{	X2-{	X2ZomX1*X54*X17*X17↵	Zoom out, making the window smaller.
View	X2{	X2{	X2ZomX1*X54*X17*X17↵	View zoom status.
Size/position configuration				
Set size and position	EscX2,X16*X16*X17*X17XY←	WX2,X16%2AX16%2AX17 %2AX17XY←	X2WinX1*X16*X16*X17*X17↵	Sets both the size and position of output X2 with a single command.
NOTE *The variables need to be in the following order: horizontal position, vertical position, horiziontal size, and vertical size.*				
View size and position	EscX2XY←	WX2XY←	X16*X16*X17*X17↵	View size and position of ouput X2.
Output configuration				
Output scaler rate				
Set output rate	X2*X21*X22 =	X2%2AX21%2AX22 =	RteX2*X21*X22↵	Select output resolution and refresh rate.
View output rate	X2 =	X2 =	X21*X22↵	Show selected output rate.
Output sync format				
Set sync format	6*X2*X24#	6%2AX2%2AX24#	X2SynX24↵	Select output sync format.
View output rate	6*X2#	6%2AX2#	X24↵	Show the selected output rate.
Output polarity				
Set polarity	7*X2*X!#	7%2AX2%2AX! #	X2Pol X!↵	X!: 0 = H-/V- (default) 1 = H-/V+ 2 = H+/V+ 3 = H+/V+
View setting	7*X2#	7%2AX2#	X!↵	View the currently set output polarity.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Presets				
Input presets (1 to 128)				
Recall preset	3*X2*X26.	1%2AX2%2AX26.	X2RprX2*X26↵	Recalls input preset X26.
Save preset	3*X2*X26,	1%2AX2%2AX26,	X2SprX2*X26↵	Saves input preset X26.
User presets (1 to 3)				
Recall preset	X2*X25.	X2%2AX25.	X2RprX25↵	Recalls user preset X25.
Save preset	X2*X25,	X2%2AX25,	X2SprX25↵	Saves user preset X25.
Audio configuration				
Audio mute				
Mute on	X2*1Z	X2%2A 1Z	X2Amt1↵	Mute selected output.
Mute off	X2*0Z	X2%2A 0Z	X2Amt0↵	Unmute selected output.
View	X2Z	X2Z	X10↵	View mute status.
Volume control				
Specific vlume	X2*X34V	X2%2A X34V	OutX2*VolX34↵	Set volume to X34 for output X2.
Increment	X2+V	X2+V	OutX2*VolX34↵	Increase volume.
Decrement	X2-V	X2-V	OutX2*VolX34↵	Decrease volume.
View	X2V	X2V	X34↵	View current volume setting.
Advanced configuration				
Test pattern				
Set test pattern	X2*X20 J	X2%2A X20 J	X2TstX20↵	Select test pattern.
View test pattern	X2 J	X2 J	X20↵	View the test pattern selection.
Film mode				
Enable	18*X2*1#	18%2AX2%2A1#	X2FlmX1 *1↵	Enable film mode (auto senses for 3:2 or 2:2 pull down).
Disable	18*X2*0#	18%2AX2%2A0#	X2FlmX1 *0↵	Disable film mode (locks de-interlacer to 2:2 pull down).
View	18*X2#	18%2AX2#	X10↵	View the currently displayed film mode setting.
Freeze				
Enable	X2*1F	X2%2A1F	X2 Frz 1↵	Freeze on.
Disable	X2*0F	X2%2A0F	X2 Frz0↵	Freeze off.
View	X2F	X2F	X10↵	Show freeze status.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
RGB delay time				
Set Delay	3*X2*X37#	3%2AX2%2AX37#	X2DlyX37↵	Set RGB delay.
View setting	3*X2#	3%2AX2#	X37↵	View RGB delay setting.
Blue screen				
On	8*X2*1#	8%2AX2%2A1#	X2Blu 1↵	Turn blue screen on.
Of	8*X2*0#	8%2AX2%2A0#	X2Blu 0↵	Turn blue screen off.
View setting	8*X2#	8%2AX2#	X10↵	View current blue screen status.
RGB pass-though				
Pass RGB input	1*X2*1#	1%2AX2%2A1#	X2Pas1↵	Set RGB pass through.
Scale RGB input	1*X2*0#	1%2AX2%2A0#	X2Pas0↵	Scale RGB input.
View setting	1*X2#	1%2AX2%2A#	X10↵	View the setting.
Auto memory				
On	X2*1M	X2%2A1M	X2Aut 1↵	Set auto memory to on.
Off	X2*0M	X2%2A0M	X2Aut 0↵	Set auto memoery to off.
View setting	X2M	X2M	X10↵	View current auto memory status.
Auto image				
Enable	55*X2*X1*1#	55%2AX1%2AX2%2A1#	X2ImgX1 1↵	Activates the auto image for all inputs.
Disable	55*X2*X1*0#	55%2AX1%2AX2%2A0#	X2ImgX1 0↵	Turns auto image off.
View	55*X2*X1#	55%2AX1%2AX2#	X10↵	View current auto image on/ off setting.
Video Scaler (ISM VS) Output				
Picture adjustments				
Video Mute				
Enable blanking	X2*1B	X2%2A 1B	X2Vmt1↵	Blanks selected output.
Disable blanking	X2*0B	X2%2A 0B	X2Vmt0↵	Displays selected output.
View	X2B	X2B	X10↵	View the blanking status.
Color				
Specify a value	X2*X15C	X2%2AX15 C	X2ColX1*X15↵	Sets color level to X15.
Increment value	X2+C	X2+C	X2ColX1*X15↵	Increase color level.
Decrement value	X2-C	X2-C	X2ColX1*X15↵	Decrease color level.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
View	X2C	X2C	X15↵	View current setting.
Tint				
Specify a value	X2*X15T	X2%2AX15 T	X2TinX1*X15↵	Sets tint level to X15.
Increment value	X2+T	X2+T	X2TinX1*X15↵	Increase tint level.
Decrement value	X2-T	X2-T	X2TinX1*X15↵	Decrease tint level.
View	X2T	X2T	X15↵	View current setting.
Contrast				
Specify a value	X2*X15^	X2%2AX15 ^	X2ConX1*X15↵	Sets contrast level to X15.
Increment value	X2+^	X2+^	X2ConX1*X15↵	Increase contrast level.
Decrement value	X2-^	X2-^	X2ConX1*X15↵	Decrease contrast level.
View	X2^	X2^	X15↵	View current setting.
Brightness				
Specify a value	X2*X15Y	X2%2AX15 Y	X2BrtX1*X15↵	Sets brightness level to X15.
Increment value	X2+Y	X2+Y	X2BrtX1*X15↵	Increase brightness level.
Decrement value	X2-Y	X2-Y	X2BrtX1*X15↵	Decrease brightness level.
View	X2Y	X2Y	X15↵	View current setting.
Detail filter				
Set detail level	X2*X15D	X2%2AX15 D	X2DetX1*X15↵	Sets detail level to X15.
Increment value	X2+D	X2+D	X2DetX1*X15↵	Increase detail level.
Decrement value	X2-D	X2-D	X2DetX1*X15↵	Decrease detail level.
View detail value	X2D	X2D	X15↵	View the detail setting.
Horizontal position				
Increment value	X2+H	X2+H	X2HphX1*X16↵	Shift window right.
Decrement value	X2-H	X2-H	X2HphX1*X16↵	Shift window left.
Vertical position				
Increment value	X2+/	X2+/	X2VphX1*X16↵	Shift window up.
Decrement value	X2-/	X2-/	X2VphX1*X16↵	Shift window down.
Horizontal size				
Increment value	X2+:	X2+:	X2HszX1*X17↵	Widen the window.
Decrement value	X2-:	X2-:	X2HszX1*X17↵	Make the window narrower.
Vertical size				
Increment value	X2+;	X2+;	X2VszX1*X17↵	Make the window taller.
Decrement value	X2-;	X2-;	X2VszX1*X17↵	Make the window shorter.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Zoom mode				
Zoom in	X2+{	X2+{	X2ZomX1*X54*X17*X17↵	Zoom in, making the window larger.
Zoom out	X2-{	X2-{	X2ZomX1*X54*X17*X17↵	Zoom out, making the window smaller.
Output configuration				
Output scaler rate				
Set output rate	X2*X21*X22 =	X2%2AX21%2AX22 =	RteX2*X21*X22↵	Select output resolution and refresh rate.
View output rate	X2 =	X2 =	X21*X22↵	Show selected output rate.
Output sync format				
Set sync format	6*X2*X24#	6%2AX2%2AX24#	X2SynX24↵	Select output sync format.
View output rate	6*X2#	6%2AX2#	X24↵	Show the selected output rate.
Output polarity				
Set polarity	7*X2*X!#	7%2AX2%2AX!#	X2Pol X!↵	X!: 0 = H-/V- (default) 1 = H-/V+ 2 = H+/V+ 3 = H+/V+
View setting	7*X2#	7%2AX2#	X!↵	View the currently set output polarity.
Presets				
Input presets (1 to 128)				
Recall preset	3*X2*X26.	1%2AX2%2AX26.	X2RprX2*X26↵	Recalls input preset X26.
Save preset	3*X2*X26,	1%2AX2%2AX26,	X2SprX2*X26↵	Saves input preset X26.
User presets (1 to 3)				
Recall preset	X2*X25.	X2%2AX25.	X2RprX25↵	Recalls user preset X25.
Save preset	X2*X25,	X2%2AX25,	X2SprX25↵	Saves user preset X25.
Audio configuration				
Audio mute				
Mute on	X2*1Z	X2%2A 1Z	X2Amt1↵	Mute selected output.
Mute off	X2*0Z	X2%2A 0Z	X2Amt0↵	Unmute selected output.
View	X2Z	X2Z	X10↵	View mute status.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Volume control				
Specific volume	X2*X34V	X2%2A X34V	OutX2*VolX34↵	Set volume to X34 for output X2.
Increment	X2+V	X2+V	OutX2*VolX34↵	Increase volume.
Decrement	X2-V	X2-V	OutX2*VolX34↵	Decrease volume.
View	X2V	X2V	X34↵	View current volume setting.
Advanced configuration				
PAL 2:2 pull-down detection				
Enable	18*X2*1#	18%2AX2%2A1#	X2FlmX1 1↵	Enable 2:2 pull down.
Disable	18*X2*0#	18%2AX2%2A0#	X2FlmX1 0↵	Disable 2:2 pull down.
View	18*X1#	18%2AX1#	X10↵	View the currently displayed film mode setting.
Freeze				
Enable	X2*1F	X2%2A1F	X2 Frz1↵	Freeze on.
Disable	X2*0F	X2%2A0F	X2 Frz0↵	Freeze off.
View	X2F	X2F/f	X10↵	Show freeze status.
RGB delay time				
Set Delay	3*X2*X37#	3%2AX2%2AX37#	X2DlyX37↵	Set RGB delay.
View setting	3*X2#	3%2AX2#	X37↵	View RGB delay setting.
Blue screen				
On	8*X2*1#	8%2AX2%2A1#	X2Blu1↵	Turn blue screen on.
Off	8*X2*0#	8%2AX2%2A0#	X2Blu 0↵	Turn blue screen off.
View setting	8*X2#	8%2AX2#	X10↵	View current blue screen status.
Edge smoothing filter				
Set filter on/off	16*X2*X10#	16%2AX2%2AX10#	X2FilX1 *X10↵	Set filter on or off.
View setting	16*X2#	16%2AX2#	X10↵	View setting.
Enhancement mode				
Set enhancement mode on/off	52*X2*X10#	52%2AX2%2AX10#	X2EhnX1 *X10↵	Set enhancement mode on or off.
View setting	52*X2#	52%2AX2#	X10↵	View setting.
Top blanking				
Specify a value	X2*X15 (	X2%2AX15 (	X2BltX1*X15↵	Specify the number of lines to blank at the top of the picture.
Increment value	X2+(	X2+(	X2BltX1*X15↵	Increase the number of top lines blanked.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Decrement value	X2-(	X2-(	X2BltX1*X15↵	Decrease the number of top lines blanked.
View	X2(	X2(	X15↵	Show the number of lines that are blanked at the top.
Bottom blanking				
Specify a value	X2*X15)	X2%2AX15)	X2BlbX1*X15↵	Specify the number of lines to blank at the bottom of the picture.
Increment value	X2+)	X2+)	X2BlbX1*X15↵	Increase the number of bottom lines blanked
Decrement value	X2-)	X2-)	X2BlbX1*X15↵	Decrease the number of bottom lines blanked..
View	X2)	X2)	X15↵	Show the number of lines that are blanked from the bottom.
Auto memory				
On	X2*1M	X2%2A1M	X2Aut 1↵	Set auto memory to on.
Off	X2*0M	X2%2A0M	X2Aut 0↵	Set auto memoery to off.
View setting	X2M	X2M	X10↵	View current auto memory status.
Auto image				
Enable	55*X1*X2*1#	55%2AX1%2AX2%2A1#	X2ImgX1 *1↵	Activates the auto image for all inputs.
Disable	55*X1*X2*0#	55%2AX1%2AX2%2A0#	X2ImgX1 *0↵	Turns auto image off.
View	55*X1*X2#	55%2AX1%2AX2#	X10↵	View current auto image on/ off setting.

Command/Response Table for IP SIS Commands

Symbol definitions

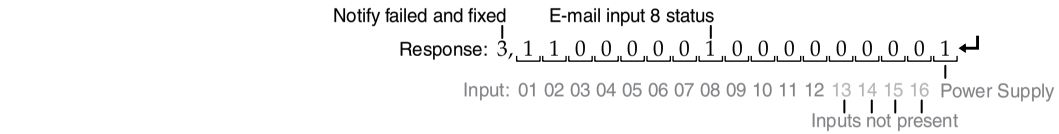
X70	= Switcher name	(Up to 240 alphanumeric characters)
NOTE	*The following characters are invalid in the name: {space} ~ , _ @ = ` [ ] { } < > ' " ; : | \ and ?.*	
X71	= Default name	ISm 824 + last 3 pairs of the MAC address
X72	= Time and date (for set)	In the format: MM/DD/YY●HH:MM:SS *where*: MM = month: 01 (January) through 12 (December) DD = 01 through 31 YY = 00 through 99 HH = 00 through 24 MM = 00 through 59 SS = 00 through 59
X73	= Time and date (for read)	In the format: Day,●DD●Mmm●YYYY●HH:MM:SS *where*: Day = weekday: Mon through Sun DD = 01 through 31 Mmm = month: Jan through Dec YYYY = 2000 through 2099 HH = 00 through 23 MM = 00 through 59 SS = 00 through 59
X74	= GMT offset	–12.0 through +14.0. Hours and minutes removed from GMT
X75	= Daylight Savings Time	0 = Daylight Savings Time off/ignore 1 = Daylight Savings Time on (northern hemisphere) 2 = Daylight Savings Time on (Europe) 3 = Daylight Savings Time on (Brazil)
X76	= IP address	###.###.###.###
X77	= Hardware (MAC) address	##-##-##-##-##-##
X78	= Number of open connections	0 - 255
X79	= Password	12 alphanumeric characters
NOTE	*The following characters are invalid in passwords: {space} + ~ , @ = ` [ ] { } < > ' " ; : | \ and ?.*	
X80	= Domain name	Standard domain name rules apply (for example: *nnnnn@xxx.com*)
NOTE	*The following characters are invalid in a domain name: {space} + ~ , = ` [ ] { } < > ' " ; : | \ and ?. The @ character is only acceptable as the lead-in to the domain name (such as @extron.com).*	
X81	= E-mail account	65 - 72. 65 = e-mail recipient 1, 66 = 2, 67 = 3, ... 72 = recipient #8
X82	= E-mail address	Typical e-mail address format (for example: *nnnn@xxx.com*)
X83	= Notify when?	0 = no response 1 = fail/missing 2 = fixed/restored 3 = both 1 & 2
X84	= Notification selections	01 through 12 = input 1 through input 12 13 through 16 = not used 17 = power supply
X85	= Notify status (for read)	17-digit number. For each digit: 0 = do not notify, 1 = notify
X86	= DHCP	0 = off, 1 = on
X87	= Port #	00 through 99 (00 = all ports)
X88	= Baud rate	9600, 19200, 38400, 115200
X89	= Parity	**o**dd, **e**ven, **n**one, **m**ark, **s**pace (only first letter required)
X90	= Data bits	7, 8
X91	= Stop bits	1, 2
X92	= Port type	0 = RS-232 1 = RS-422
X93	= Verbose mode	0 = clear/none (default for Telnet connection) 1 = verbose mode (default for RS-232/RS-422 connection) 2 = tagged responses for queries 3 = verbose mode and tagged for queries
NOTE	*If tagged responses is enabled, all read commands return the constant string and the value as the set command does (for example, the read matrix name command Esc CN ↵, returns Ipn● X70 ↵).*	
X94	= RAM status	0 = RAM dirty (needs saving to flash) 1 = RAM has been saved (ok to power off/reset)

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Interface ports configuration				
Set switcher name	Esc X70 CN ←	W X70 CN |	Ipn• X70 ↵	
Read switcher name	Esc CN ←	WCN |	X70 ↵	
Reset switcher name to factory default	Esc • CN ←	W • CN |	Ipn• X71 ↵	
Set time and date	Esc X72 CT ←	W X72 CT |	Ipt X72 ↵	
Read time and date	Esc CT ←	WCT |	X73 ↵	
Set GMT offset	Esc X74 CZ ←	W X74 CZ |	Ipz X74 ↵	
View GMT offset	Esc CZ ←	WCZ |	X74 ↵	
Set Daylight Savings Time	Esc X75 CX ←	W X75 CX |	Ipx X75 ↵	
Read Daylight Savings Time	Esc CX ←	WCX |	X75 ↵	
Set IP address	Esc X76 CI ←	W X76 CI |	Ipi X76 ↵	
Read IP address	Esc CI ←	WCI |	X76 ↵	
Read hardware address	Esc CH ←	WCH |	X77 ↵	
Read # of open connections	Esc CC ←	WCC |	X78 ↵	
Set subnet mask	Esc X76 CS ←	W X76 CS |	Ips X76 ↵	
Read subnet mask	Esc CS ←	WCS |	X76 ↵	
Set gateway IP address	Esc X76 CG ←	W X76 CG |	Ipg X76 ↵	
Read gateway IP address	Esc CG ←	WCG |	X76 ↵	
Set administrator password	Esc X79 CA ←	W X79 CA |	Ipa• X79 ↵	
Read administrator password	Esc CA ←	WCA |	X79 ↵	
Reset (clear) administrator password	Esc • CA ←	W • CA |	Ipa• ↵	
Set user password	Esc X79 CU ←	W X79 CU |	Ipu• X79 ↵	
Read user password	Esc CU ←	WCU |	X79 ↵	
Reset (clear) user password	Esc • CU ←	W • CU |	Ipu• ↵	
Set mail server, domainname	Esc X76 , X80 , X79 CM ←	W X76 , X80 , X79 CM |	Ipm X76 , X80 , X79 ↵	
Read mail server, domainname	Esc CM ←	WCM |	X76 , X80 , X79 ↵	
Set e-mail recipient *Example:*	Esc X81 , X82 CR ← Esc 72,Jsmith@folklore.net CR ←	W X81 , X82 CR | W72,Jsmith@folklore.net CR |	Ipr X81 , X82 , ↵ Ipr72,Jsmith@folklore.net,↵	This command sets the recipient. To receive e-mail notifications, you must then set the events that the switcher reports, using one or more separate *Set e-mail events (EM)* commands (see next page).

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Read e-mail recipient	Esc X81 CR ←	W X81 CR |	X82 , ↵	You must first have set an e-mail recipient for the e-mail account number (X81), using the separate Set e-mail recipient (CR) command.
Set e-mail events for recipient	Esc X81 , X83 , X84 , X84 , ... X84 EM ←	W X81 , X83 , X84 , X84 , ... X84 EM |	X83 , X84 ↵	
Example:	Esc 72,3,1,2,8,17EM ←		See below	E-mail account #72, JSmith, will receive fail/missing and fixed/restored messages for inputs signals 1, 2, and 8 and the power supply.
Response description	*Notify when?, inputs 1 - 16 (13 through 16 not present on this model) PS* ↵			



Read e-mail events for recipients	Esc 72EM ←	W72EM |	X84 ↵	
Set DHCP on or off	Esc X86 DH ←	W X86 DH |	Idh X86 ↵	
Read DHCP on/off status	Esc DH ←	WDH |	X86 ↵	
Read parameters	Esc X87 CP ←	W X87 CP |	X88 , X89 , X90 , X91 ↵	
Set mode	Esc X87 * X92 CY ←	W X87 * X92 CY |	Cpn X87 • Cty X92 ↵	
Read mode	Esc X87 CY ←	W X87 CY |	X92 ↵	
Set verbose mode	Esc X93 CV ←	W X93 CV |	Vrb X93 ↵	
Read verbose mode	Esc CV ←	WCV |	X93 ↵	
Commit RAM to flash memory	Esc 1FF ←	W1FF |	Nvr X94 ↵	
Check RAM	Esc FF ←	WFF |	X94 ↵	

Chapter Five

ISM 824 Multiswitcher Software

ISM 824 Windows Control Program

Button Label Generator

ISM 824 Windows Control Program

The Windows-based Extron ISM 824 Control Program, which communicates with the switcher via the RS-232/RS-422 port, the Configuration port, and the LAN port, provides an easy way to configure and operate the ISM 824 Integration Scaler Multiswitcher. The program is compatible with Windows 2000 and Windows XP.

Installing the software

The program is contained on the Extron Software Products CD-ROM, disk B, and is also available from the Extron web site (*www.extron.com*). Select the method of installation below that applies to your situation.

NOTE *If your CD-ROM does not contain the ISM 824 Control Program, follow the "Installation from the web site" section later in this chapter, to locate and install the software.*

Extron recommend going to the web site (www.extron.com) and checking for the latest versions or updates after installation from the CD-ROM.

NOTE *For full functionality, download and install all of the following programs from the CD-ROM or the web site (www.extron.com):*

- *The ISM 824 Control Program*
- *The Firmware Loader*
- *The IP Link File Manager*

Installation from the CD-ROM

To install the software from the CD-ROM, do the following:

1. If you have the CD-ROM, insert it into the CD drive. The installation program should start automatically. If it does not, run Launch.exe from the CD.

   The Extron software CD window appears (figure 5-1).

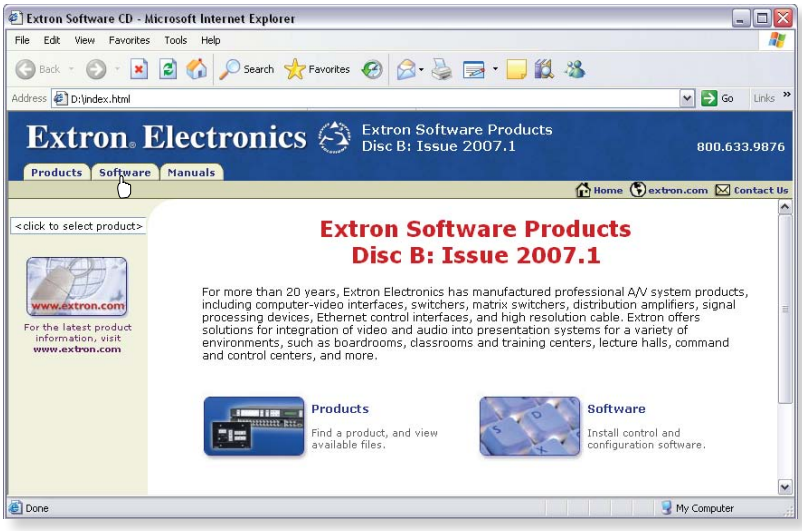


Figure 5-1 — Software CD window

2. Click on the Software tab (figure 5-1).
3. Scroll to the desired program and click **Install** (figure 5-2).

Figure 5-2 — Software installation

4. Follow the on-screen instructions. By default, the Windows installation of the Matrix Switchers Control Program creates a C:\Program Files\Extron\ ISM 824, and it places three icons into a group folder named "Extron Electronics\Matrix Switchers." The three installed icons are:

   - ISM 824 Control Pgm
   - Uninstall ISM 824
   - ISM 824 Help

NOTE *The ISM 824 can support remote control via the front panel Configuration port, the rear panel RS-232/RS-422 port, and/or the LAN port. For serial port control, the program can operate at 9600, 19200, 38400, and 115200 baud rates. See chapter 3, "Operation and Setup", "Editing the communications settings" section, to configure the rear panel RS-232/RS-422 port from the front panel.*

Installation from the Web site

To install the control program from the web site, do the following:

1. Go to the Extron web site (**www.extron.com**), and click on the Downloads tab (the right-most tab on the home page). This will open the "Download Center" web page (see figure 5-3).
2. On the Downloads Center page, click "Software" in the left-most column (see figure 5-3). This opens the Control software list for Extron products.

Figure 5-3 — Download Center Web page

3. Either scroll down to the ISM 824 Windows Control program, or click on the letter "I" in the list at the top of the page to take you to the software selection list for Extron products beginning with an "I". Then scroll to the ISM 824 Windows Control program.
4. Click **Download** (on the far right) for the ISM 824 software. Follow the instructions on the screen to begin the download. When prompted click **Run** or **Save** as desired.

NOTE *Clicking* **Run** *causes the program to automatically run and installs the file to the default folder (C:\Program Files\Extron\ ISM 824).*
Clicking **Save**, *allows you to choose where to save the .exe file. Record where this is, as you will need to activate it (by double clicking on the .exe file) to fully install the program at a later time.*

Using the software

The items found in the ISM 824 Control Program are also accessible via front panel controls (see chapter 3, "Operation and Setup") and under SIS™ control (see chapter 4, "SIS™ Programming and Control"). The ISM 824 Help Program provides information on settings and on how to use the control program itself. Use the software as follow:

1. To run the ISM 824 Control Program, either double click the desktop icon (if installed) or select Start > Programs > Extron Electronics >ISM 824 > ISM 824.

One of two Connect Type selection windows appears (see figure 5-4).

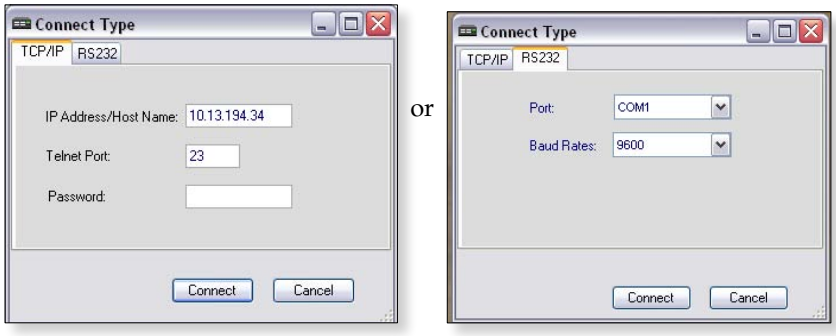


Figure 5-4 — Connection type selection windows

2. If the preferred window is not showing, click the other tab to make it available:
   - **TCP/IP tab** (used for connection via the LAN port — proceed to step **3**), **or**
   - **RS-232 tab** (used for connection via the rear panel RS-232/422 port or front panel Configuration port — proceed to step **4**).
3. **If connecting by TCP/IP**:
   a. Observe the Extron IP Address and Telnet Port fields in the IP Connection window. The field displays the last Extron IP address and Telnet Port entered.

      If the IP Address and Telnet fields are correct, proceed to step **3b**.

      If the address is not correct, click in the IP Address field and enter the IP address.

NOTE *If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field*

      If the Telnet Port is not correct, click in the Telnet field and enter the Telnet Port number. Proceed to step **3b**.

NOTE *If the local system administrators have not changed the Tenet Port value, then 23 is the correct value for this field.*

   b. If the switcher is password protected, click in the Password field and enter the appropriate administrator or user password.

   c. Click **Connect**.

NOTE *If you logged on using the administrator password, the Windows program connects you to the ISM 824 multiswitcher with all of the administrator rights and privileges.*

NOTE *If you logged on using the user password, the Windows program connects you to the ISM 824 multiswitcher with only user capabilities.*

If a password was required and not entered or if an incorrect password was entered, the program prompts for the password.

When the program starts satisfactorily, the Extron ISM 824 Control Program main window (figure 5-5) appears.

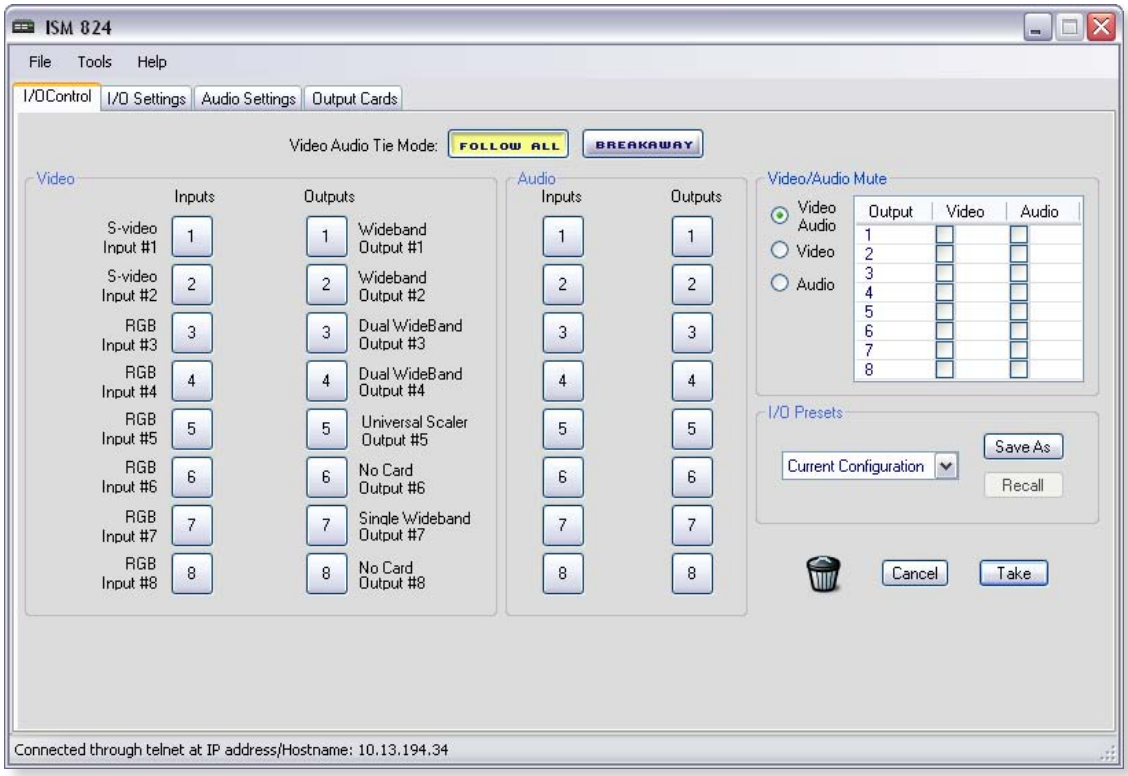


Figure 5-5 — ISM 824 Control program main window opens on the I/O Control tab

NOTE *The connection method used is shown at the bottom left of the main window*

4. **If connecting by RS-232:**

   a. click the Port drop box and select the comm port that is connected to the multiswitcher's front panel Configuration port or to the rear panel RS-232/RS-422 port.

   b. Check the baud rate displayed in the window. If the baud rate needs to be changed, click on the Baud rate drop down button and double-click on the desired baud rate.

NOTE *Available rates are 9600, 19200, 38400, and 115200. The default is 9600.*

   c. Click **Connect**.

NOTE *To find the IP and MAC addresses, the baud rate of the comm port used, press the menu button on the front panel of the ISM 824 repeatedly until "View Comm Settings" menu appears. Then press next for each address or setting required.*

The Extron ISM 824 Control Program main window (figure 5-5) appears.

Control program menus and pages

Extron ISM 824 Control Program (figure 5-5) emulates some of the front panel features of the ISM 824 multiswitcher. The main software window has four pages; I/O control, I/O settings, Audio settings, and Output cards. Each one of these pages are interactive and are used to configure and control the ISM 824 when connected. Click on each one as desired to complete configuration of the multiswitcher, following the instructions below.

Other settings and features are available through the drop down menu system under " File", "Tools", and "Help".

Menu features

There are three menu item on the menu bar; File, Tools, and Help.

File

This drop down menu has the following items: Connect, Disconnect, File Manager, and Exit.

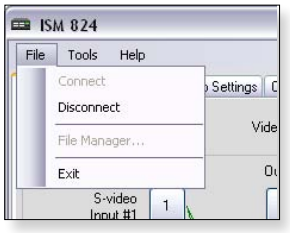


Figure 5-6 — File menu

- **Connect** — Selecting this opens a window with two connection type tabs (see figure 5-4). Select the connection method preferred, complete the address fields then click **Connect** to connect with your ISM 824. The status bar at the bottom of the main window indicates connection status.
- **Disconnect** — Selecting this disconnects the software from the ISM 824. The interactive fields in the current control panel window are grayed out, and the pages and tools menu are non selectable. The status bar at the bottom of the main window indicates disconnected status.
- **File Manager** — This menu allows the user to access, sort, delete or create files to upload to the ISM 824.
- **Exit** — Select this to close the ISM 824 Windows Control program. To restart the program follow the "Using the software" section, earlier in this chapter.

Tools

This drop down menu has the following items: Data Tracer, Device Images, Executive Mode, I/O Group Settings, Output Card Reset, Unit Settings, Unit Reset, and Update Firmware.

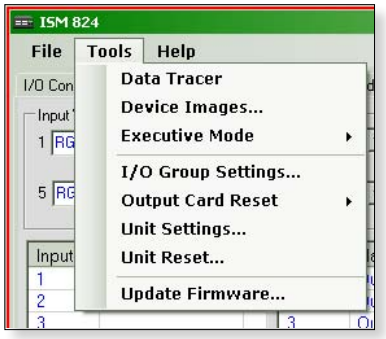


Figure 5-7 — Tools menu

- **Data Tracer —** Selecting this opens a small window in which the transmit and receive (Tx/Rx) data between the control software on the host PC and the ISM 824 can be viewed in ASCII format (see figure 5-8). During data transmission and receipt, the data tracer widow is constantly updated. To close the window click **Close** or the X in the window's top right corner.

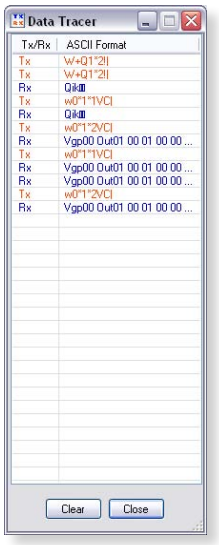


Figure 5-8 — Data tracer window

- **Device Images —** Selecting this opens a small window with device icons which are useful in identifying the input sources and output devices used. To use, drag suitable icons from the window and drop them onto the input or output buttons on the I/O Control page (see figure 5-9) To close the window click on the X in the window's top right corner.

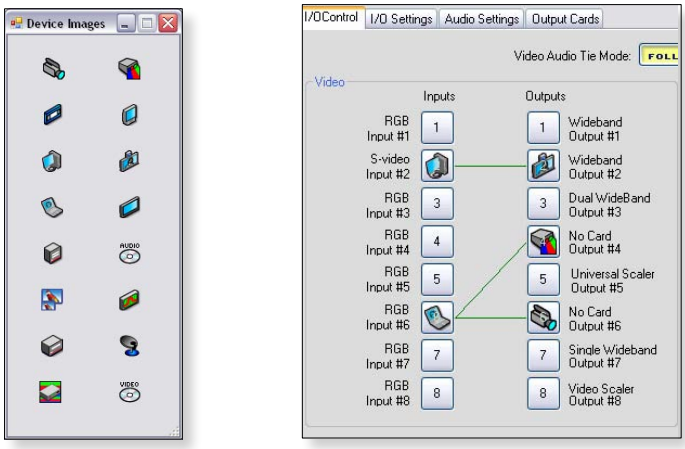


Figure 5-9 — Device image window and I/O buttons with icons in place

To replace any device icon with another, right click on the icon to be replaced. A small text window appears. Click on "Changes Device Image". This opens the Device Image window. Drag the new icon onto the button.

To remove an icon from a button, right click on the icon to be removed. A small text window appears. Click on "Remove Device Image". This removes the device image icon from the button.

- **Executive mode —** The Executive mode locks out some or all of the front panel features, and has three levels. Select the mode level applicable.
  - ○ **View mode –** This locks out the front panel menu, picture adjustment, input, and output buttons but allows a user to view the ties.
  - ○ **I/O ties only –** This locks out the front panel menu and picture adjustment buttons but allows a user to make, remove, and view the ties, recall I/O presets, adjust gain/attenuation, and control backlight (on/off).
  - ○ **Off –** This turn off the executive mode. Full front panel configuration is possible.

NOTE *When any executive mode is enabled, only front panel operations are affected. Full configuration is still available via control software or Ethernet.*

When the unit's executive mode is set to View mode, the Video, and Audio buttons flash when a locked out front panel operation is attempted.

When the unit's executive mode is set to I/O ties only, the Enter, Video, and Audio buttons flash when a locked out front panel operation is attempted.

- **I/O Group Settings —** This menu allows the user to make, change, and view input to output (I/O) groupings.

To set or change I/O groupings, do the following:

1. Click on the menu to open a new window. This window (see figure 5-10) shows the free (ungrouped) input and output buttons, and eight grouping boxes (input groups 1-4, and output groups 1-4).

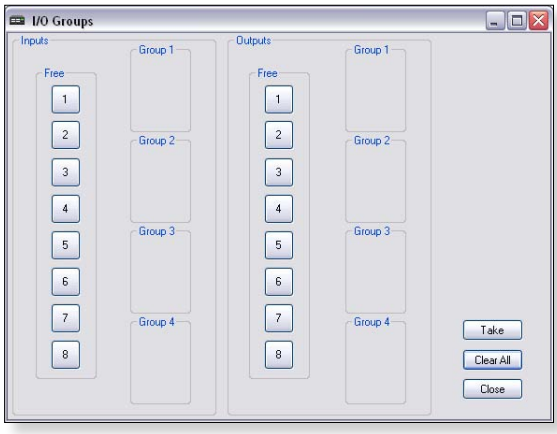


Figure 5-10 — ISM 824 I/O Group Settings menus – all groups cleared

2. Drag any input or output button into any of the applicable group boxes.

NOTE *Only inputs can be placed into the input groups, likewise only outputs can be placed into the output groups.*

Grouped inputs only output to the same numbered output group (e.g. in figure 5-11, input 5 within group 1, only outputs to outputs 1 and/or 4).

3. Click **Take**. The groups are now made (see figure 5-11).

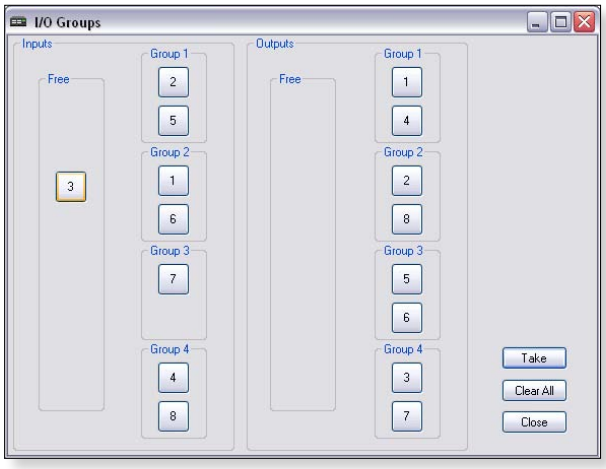


Figure 5-11 — ISM 824 I/O grouping completed

NOTE *To clear all groups click* **Clear All**.

To remove individual inputs or outputs from a group, drag the selected button onto the applicable free box and release.

To move individual inputs or outputs to different group, drag the selected button into the desired group, and release.

4. Click **Close** to exit from the I/O Groups window. The window closes.

- **Output Card Reset —** Click on this to reset any installed output cards back to the factory default settings.

1. Click on the menu to open a drop down window. This window lists the installed cards (see figure 5-12).

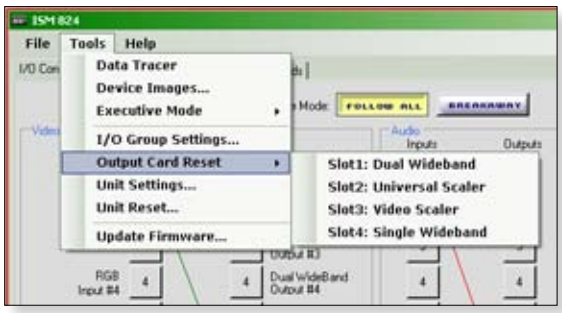


Figure 5-12 — ISM 824 Output Card Reset

2. Select the output card to reset. The window closes and a new confirmation/ cancel window opens.

3. Click **OK** to reset the selected output card, or click **Cancel** to exit the operation without making changes.
The window closes and the card is either reset to the default state, or no changes are made.

• **Unit Settings —** Click on this to open the settings window. This window has two tabs, IP and RS-232, each of which shows the setting for the host controller connection to the ISM 824 (see figure 5-13).

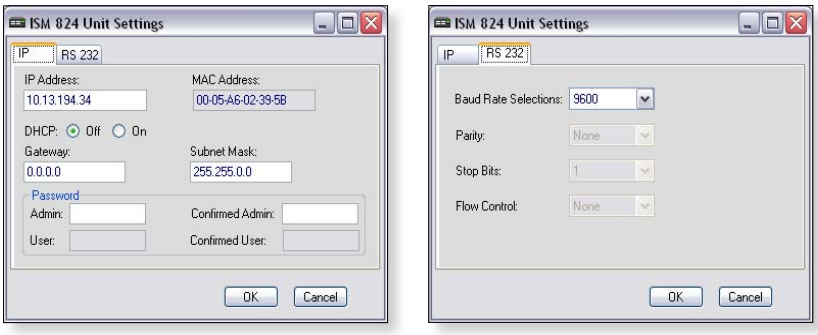


Figure 5-13 — ISM 824 Unit Settings menus – IP and RS-232 windows

○ **IP Settings tab —** This window displays the following settings:
IP address (default is 192.168.255.255), DHCP status (On or Off, default is Off), Gateway address (default is 0.0.0.0), MAC Address (this cannot be changed), Subnet address (default is 255.255.0.0), Admin and User login passwords. To change any of these settings do the following:

⊙ **IP address —** Enter a suitable IP address and click **OK**. The new address is uploaded to the ISM 824.

NOTE *For this, and other operations, clicking* **Cancel** *exits the operation without making any changes.*

NOTE *See chapter 6, "HTML Operation" for information about DHCP, IP, Gateway, Subnet, and MAC address formats. See Appendix A for Subnetting details.*

⊙ **Gateway address —** Enter a suitable Gateway address and click **OK**. The new address is uploaded to the ISM 824.

⊙ **MAC address — This address cannot be changed.** The MAC address is an unique identifier for each ISM 824, and is hard coded in the device.

⊙ **Subnet address —** Enter a suitable Subnet address and click **OK**. The new address is uploaded to the ISM 824.

⊙ **Password –** Enter suitable admin and user passwords as desired. Click **OK**. This sets the passwords for user and admin control.

○ **RS-232 Settings tab —** This window displays the following settings:
Baud Rate selections (default is 9600), Parity (default is none), Stop Bits (default is 8), and Flow Control (default is none).
To change these settings do the following:

⊙ **Baud Rate —** Select a suitable Baud rate from the drop down list and click **OK**. The new Baud rate is uploaded to the ISM 824.

⊙ **Parity – This cannot be changed from this window.**

⊙ **Stop Bits – This cannot be changed from this window.**

⊙ **Flow Control – This cannot be changed using this window.**

• **Unit Reset...** — Select this to reset the ISM to factory defaults. A warning window stating "This unit will reset back to factory defaults" appears before resetting. Click **OK** to proceed. Reset will commence after a short delay. A progress bar ("Initializing...") fills green during the reset process.

NOTE *All ties and user settings are lost when the ISM restarts, and the unit reverts to factory defaults.*

- **Updating Firmware** — To update the ISM 824 firmware using the configuration utility, do the following:

1. Click on **Update Firmware...**. The utility window minimizes, and a new window (Extron Firmware Loader) appears.
2. Check or edit the settings in the Port Configuration boxes on the RS-232 tab. Alternatively check or edit the boxes on the TCP/IP tab (see figure 5-14). On the TCP/IP page, enter a password if needed. Click **OK**. The Firmware Loader attempts to connect to the device.

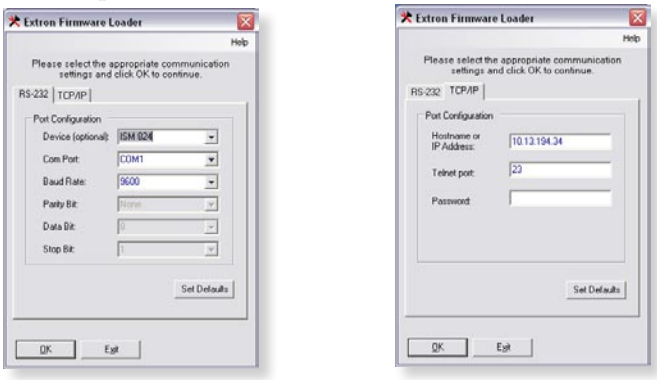


Figure 5-14 — Firmware Loader RS-232 and TCP/IP port configuration windows

NOTE *If the* **Set Defaults** *button is clicked, all values in the boxes are cleared and set back to factory defaults.*

If the connected device is not supported, or the connection settings are not correct, an error message appears, and no firmware can be uploaded to the device.

3. When the device is detected a window opens showing the current device information (model part number and firmware version). Click on **Browse** to locate the firmware update to be loaded. This opens a search window. Search and locate the file to be uploaded (firmware files have the extension .s19), select the file and click **Open**. The file name appears in the Firmware Loader box (see Fig 5-15)

NOTE *The Loader auto detects the serial comm port baud rate and displays it in the window.*

Figure 5-15 — Firmware Loader window with selected firmware file

4. Click **Upload**. The Firmware Loader commences uploading the file to the device, and the Firmware Loader window indicate uploading is occurring. The ISM also displays the process on its LCD panel.

NOTE *When uploading via an RS-232/RS-422 connection, an advisory window opens. Click* **OK** *or* **Cancel** *as appropriate.*

Figure 5-16 — Advisory window for RS-232/RS-422 connection uploads

5. Upon completion, the Firmware Loader window indicates the ISM is restarting. When successfully restarted, the window indicates "Transfer Complete!" Click **Exit** to exit the program. The Firmware Loader window closes and the control program window re-appears on screen.

NOTE *After the device has been restarted, ensure the control program is reconnected, before any changes made using the control software are transmitted to the device.*

Figure 5-17 — Firmware upload complete

Help

This drop down menu has the following two items, Contents and About ISM 824.

○ **Contents** — Select this help file for on-screen instruction in using the ISM 824 Windows Control program.

○ **About ISM 824...** — Select this to view the control program part number, the software version number, the ISM 824 part number, the firmware version number, and the ISM 824 internal temperature. Click **OK** (or the X in the top right) to close the window.

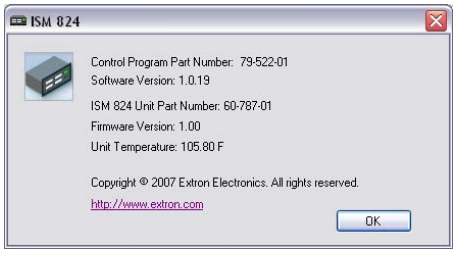


Figure 5-18 — Control program About screen

I/O control page

Selecting the first tab, opens the I/O Control page. Upon opening, this page shows the current configuration for input to output ties, video/audio tie modes (follow all or breakaway), and output mute status. Use this page to create or remove ties, mute or unmute output signals, and save, recall or delete presets.

Creating a tie

To create an input to output tie do the following

1. Select the Video/audio mode; "**Follow all**" or "**Breakaway**" (see figure 5-19).

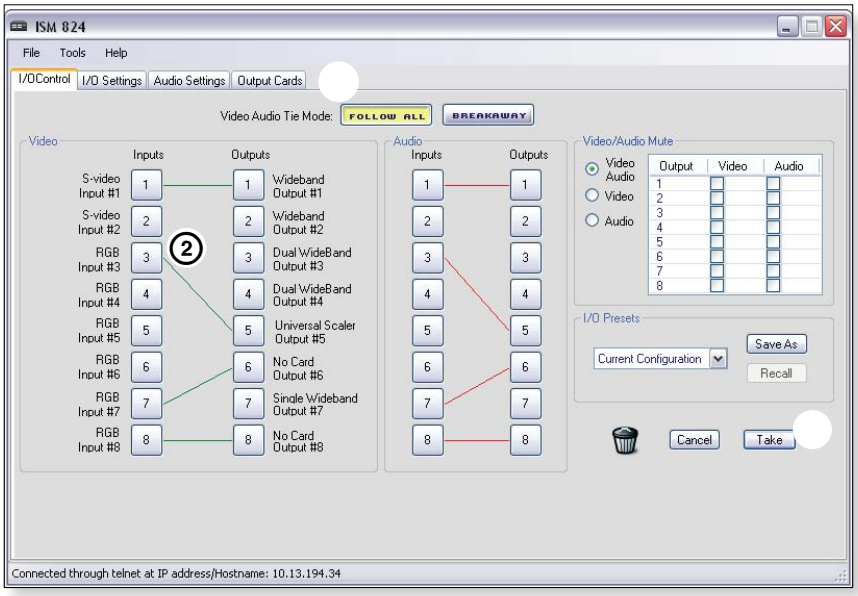


Figure 5-19 — Create ties on the I/O Control page

NOTE *"**Follow all**" ties the input video and audio signal to the same output, whereas "**Breakaway**" allows the video and audio signals to be tied to different outputs.*

2. Drag and drop the desired input button over to the desired output button and release. A broken line appears (green for video, red for audio), connecting the input and output button (see input 3 and output 5 in figure 5-19). Repeat as desired for all ties that need creating.
3. Click **Take**. The ties are created and any broken lines become solid.

Removing a tie

To remove an input to output tie do the following:

1. Select the Video/audio mode; "**Follow all**" or "**Breakaway**".
2. Drag either the desired output or input button over to the waste bin icon and release. A broken line appears (green for video, red for audio), connecting the input and output buttons.

NOTE *Select "**Follow all**" to remove both video and audio ties at the same time, and drag the button from either the video or the audio section.*

NOTE *Select "**Breakaway**" if only the video tie, or only the audio tie is to be removed. Drag the button from the relevant section.*

3. Click **Take**. The ties are removed and any broken lines disappear.

Muting or unmuting output signals

To mute or unmute output video signals, audio signals, or both do the following:

1. Click on the radio button for the type of mute desired; video and audio, video only, or audio only (see figure 5-20). The button fills green. If the video only or audio only button is selected, the other column becomes grayed out and is non selectable.

NOTE *Only one button can be selected at a time to make changes. Repeat steps **1** and **2** for the other buttons as desired. Output mute selections remain in effect until they are deselected (unmuted).*

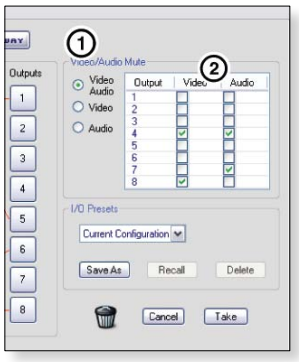


Figure 5-20 — Output video and audio signal muting

2. Click in the video box or audio box against the output for which the signals are to be muted. A check mark appears in the box.

NOTE *If muting video and audio output together, clicking in one of the boxes makes check marks appear in both boxes.*

3. To unmute an output signal, click the video/audio button, then click the checked signal box (video, audio, or both) against the desired output. The check marks disappear.

Saving a preset

To save the current configuration as a preset, do the following:

1. With "Current Configuration" visible in the I/O presets field, click **Save As**. This opens a separate window, I/O Preset (see figure 5-21).
2. In the I/O Preset window select a number from the drop down box. The Preset Name field will auto fill with "Preset xx", where "xx"is the number selected (see figure 5-21).

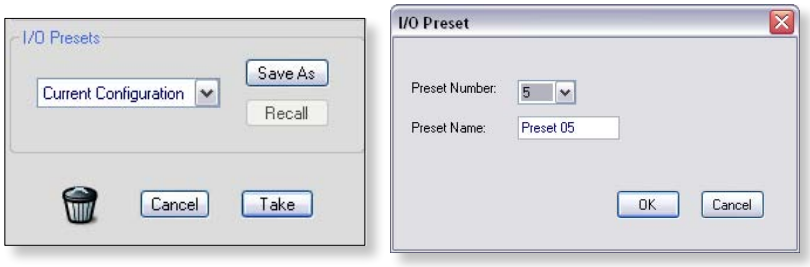


Figure 5-21 — Click " Save As" to open the I/O Preset selection window

3. Click **OK,** and the current configuration is now saved under that preset number. The I/O Preset window closes

NOTE *Clicking* **Cancel** *in the I/O Preset window (figure 5-21, right image), at any time before completing Step* **3**, *closes that window and reverts back to the I/O Presets window (figure 5-21, left image), without saving to any preset.*

Recalling a preset

To recall a preset, do the following:

1. Within the I/O Presets section (on the I/O Control page) click on the drop down box and scroll to the preset which is to be recalled (see figure 5-22).

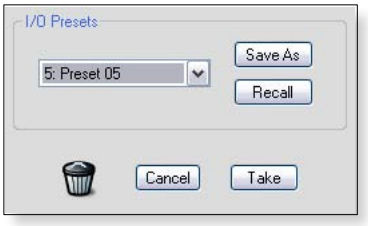


Figure 5-22 — Recalling a preset

2. Click **Recall** to recall the preset.

NOTE *Recalling the preset overwrites the current configuration, and the inputs and outputs will change to the preset setting.*

I/O Settings page

Selecting the second tab opens the I/O Settings page and shows the current I/O settings (see figure 5-23). Use this page to configure the video type for each individual input, create input and output names, and set the RGB delay (from 0.0 to 5.0 seconds in 0.1 second intervals) for individual outputs.

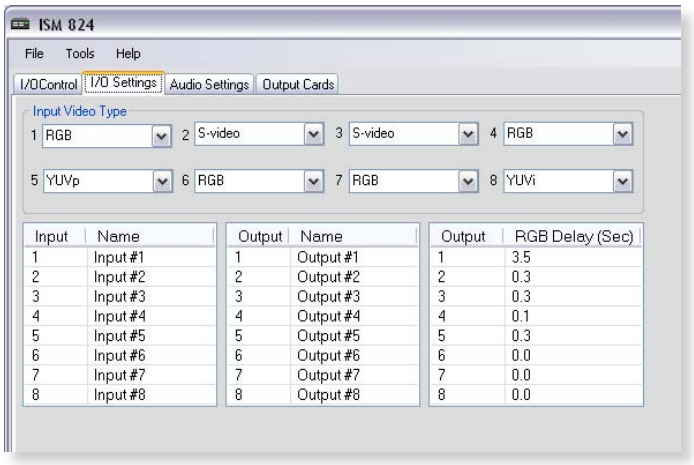


Figure 5-23 — Current input and output settings on the I/O settings page

Configuring the input video signal type

To configure the input video type, do the following:

1. Click on the drop down box of the input number to be configured (see Figure 5-24). A list of video types appears.

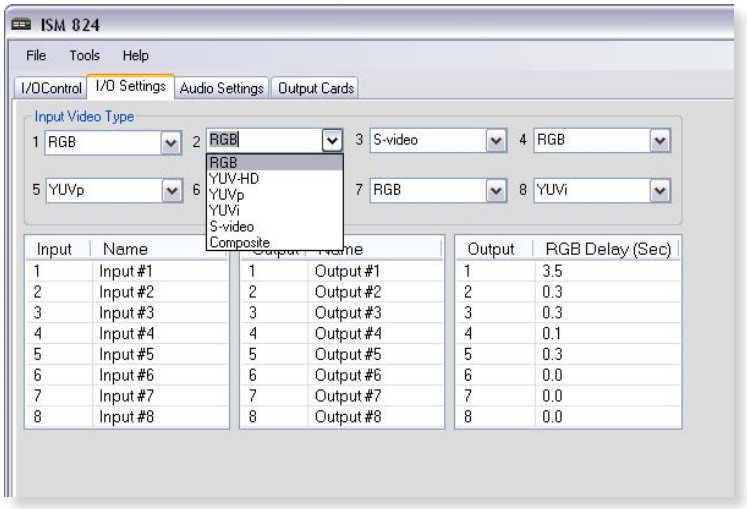


Figure 5-24 — Scroll down video type list and select

2. Scroll down the list to the video type desired and click it . The list disappears and the field displays the selected video type. The video type is then shown on the I/O Control page alongside the video input button.

Creating or editing input and output names

To create or edit input and output names, do the following:

1. Click in the name field for an input or output, and type a suitable name. The new names are shown on the I/O Control page alongside the video buttons, with the signal type (see figure 5-25).

NOTE *The name cannot be left blank or contain more than 12 characters, including spaces. If the name is left blank, another window opens which informs the user the name cannot be left blank, and will default to last valid input name.*

The following characters are invalid: |, ~, {, }, [,], <, >, ;, ?, @

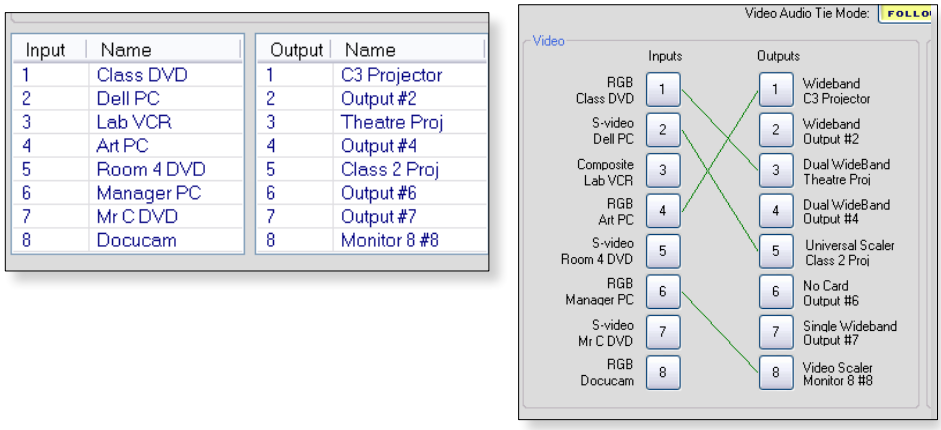


Figure 5-25 — Enter a name for inputs and outputs

Setting the RBG delay

To set the RGB delay, do the following:

1. Click in an output RGB Delay field where delay (in 0.1 seconds intervals) is to be changed. Up and down scroll arrows appear (see figure 5-26).

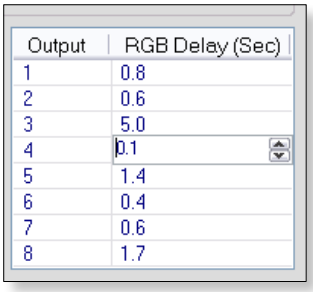


Figure 5-26 — Enter a value, or scroll the arrows to the desired setting

2. Either directly enter a value for the RGB delay (e.g. 1.7), or scroll the arrows to the desired setting. Minimum is zero (0), maximum is five (5.0) seconds.

Audio Settings page

Selecting the third tab opens the Audio Settings page and shows the current audio settings (see figure 5-27). Use this page to configure different input gain and attenuation levels (from +24 to -18 dB) for each input, and different volume levels (from 0 to -64 dB, where value 0 = -64 dB, 64 = 0 dB) for each output. In addition, all inputs and outputs can be set to the same level as those set for input 1. The minimum and maximum value are shown.

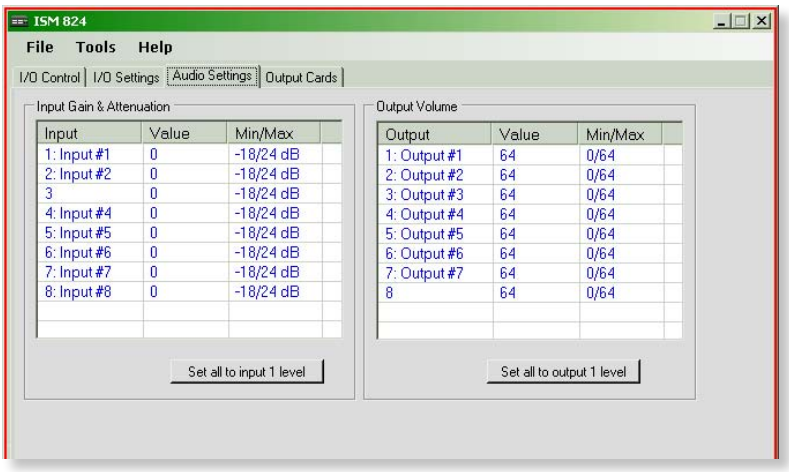


Figure 5-27 — Enter a value or scroll arrows to desired setting

Adjusting the input gain and attenuation

To adjust the input gain and attenuation, do the following:

1. Click the input which is to be adjusted. The value field will open and show two scrolling arrows.
2. Either; using the arrows, scroll up or down to the desired setting (in 1 dB increments), or directly type in the value (see figure 5-28). Press Enter. The input's gain and attenuation is set to that level.

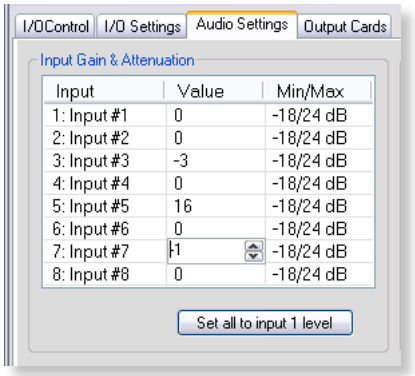


Figure 5-28 — Enter a value, or scroll the arrows to set the input levels

NOTE *If a value beyond the minimum or maximum level (-18 dB or +24 dB) is entered, the entry defaults to -18 dB or 24 dB or respectively.*

3. To set all inputs to the same value, enter the value in input 1 and click **Set all to Input 1 level**. All fields are changed to match input 1's entry.

Adjusting the output volume level

To adjust the output volume level, do the following:

1. Click the output that is to be adjusted. The value field opens and shows two scrolling arrows.
2. Either; using the arrows, scroll up or down to the desired setting (from 0 to 64, where value 0 = -64 db, 64 = 0 dB), or directly type in the value (see figure 5-29). Press Enter. The output's volume is set to that level.

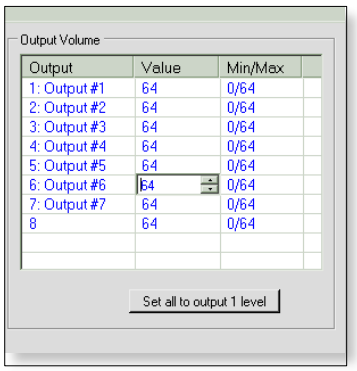


Figure 5-29 — Enter a value or scroll arrows to set the output volume

NOTE *If a value beyond the maximum or minimum level (0 or 64) is entered, the entry defaults to 0 or 64 respectively.*

3. To set all output volumes to the same value, enter the value in input 1 and click **Set all to output 1 level**. All fields are changed to match output 1's entry.

Output Cards page

Selecting the fourth tab opens the Output Cards page, which allows the user to individually configure up to four output cards. Each installed configurable card has a radio button next to the name. Click on this button to choose the card to be configured.

NOTE *Non-configurable cards, such as wideband cards, show a grayed-out radio button.*

Universal Scaler

Use this page to configure the Universal Scaler output card (for any input) for the following settings:

- create an input to output tie
- picture adjustments — image color, tint, brightness, contrast, detail, horizontal and vertical positioning, horizontal and vertical sizing, and zoom
- input settings — pixel phase, number of active and total pixels, number of active lines, and number of the horizontal and vertical start point
- aspect ratio — select a value (16:9 or 4:3)
- output configurations — resolution, output type, output rate, and sync polarity
- advanced configurations — test pattern selection, film mode, blue mode, RGB signal pass-through selection, auto image, and auto memory
- user presets (presets #1-3) — save and recall
- input presets (presets # 1 through 128) — save and recall
- Start Auto image
- Freeze (image)

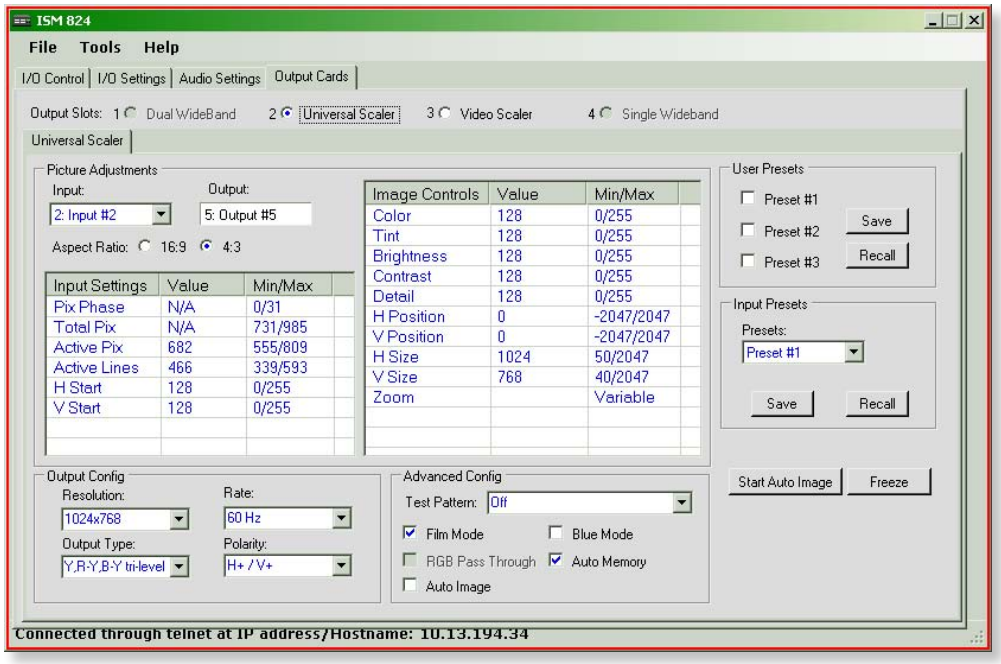


Figure 5-30 — Current Universal Scaler output card settings

NOTE *Each input to any output card can have different picture adjustments settings. The image control default settings are 50% of the min/max (see figure 5-30). Some values may be auto detected (e.g. for H and V size), and values that are not available are shown as N/A.*

Making input to output ties

To make input to output ties, do the following:

1. Click the input drop down box and select the input to be tied to the current card.

NOTE *When an input is changed, all the fields on the page refresh to show the current settings for that input. The output number cannot be changed, as this is the output (port) where the card is installed.*

To have no input ties to an output card, select N/A from the inputs list.

Some configurable fields may not be available for the input selected. Those fields show "N/A".

Making picture adjustments

To make picture adjustments, do the following:

1. Click the input drop down arrow and select the input number tied to the output card. The image control fields will refresh.

NOTE *If a different input number was selected, the refreshed fields may have changed values and availability from the previous setting.*

2. Click in the image control value field to be changed. The value field opens. and shows two scrolling arrows.
3. Either; using the arrows, scroll up or down to the desired setting, or directly type in the value. Press Enter. The output's image is set to that level.

NOTE *If a value exceeding the minimum or maximum levels (see Min/Max column) is entered, the program defaults to the minimum or maximum level.*

If a large value change is entered for H position, H size, V position, or V size, the image may move outside the viewing area. If this happens, reset to the previous setting and make smaller increments or decrements until the image is as desired.

If an input is not tied to the output card or is a pass through input, all value fields show N/A.

Configuring output resolution, rate, output type, and sync polarity

To configure output resolution, rate, output type, and polarity, do the following:

1. In any of the fields to be changed, click on the drop down arrow and choose the relevant setting. The image control and input settings fields will refresh, reflecting the new output config. settings (e.g. H and V size). The displayed image is displayed with the new settings.

NOTE *If an incorrect output type is selected, the image is not displayed.*

Selecting an aspect ratio

To select an aspect ratio, do the following:

1. Select the desired aspect ratio (16:9 or 4:3). The displayed image adjusts to the aspect ratio selected.

Selecting a test pattern

To select a test pattern from the advanced configuration settings, do the following:

1. To select a test pattern, click on the test pattern field arrow. A drop down list appears.

2. Select a test pattern from the list by clicking on it. The test pattern becomes the current image.

NOTE *If a 4:3/16:9 Film Aspect Ratio (1.33 through 2.35) is selected, it superimposes the sizing box over the current image.*

3. To turn the test pattern off, select off from the list. The previous image is displayed

Selecting blue mode, film mode, auto image, or RGB pass through

To select blue mode, film mode , auto image, or RGB pass-through from the advanced configuration settings, do the following:

1. To select any of these settings, click the check box alongside the setting name.

NOTE *If blue mode is selected, only the sync and blue video signal are passed to the display.*

If RGB Pass Through is selected, the output card will pass through an RGB signal unprocessed.

The film mode box will be greyed out if this option is not available with some input video signals (e.g. an RGB input).

2. To turn off the two modes, auto image, or pass-through, uncheck the boxes.

Deselecting or re-selecting auto memory

Auto memory is enabled by default, and should only be disabled if input presets are to be used. See "Saving inputs presets", below for details.

To deselect (or re-select) auto memory, do the following:

1. Click in the Auto memory box. When enabled, the green check mark is shown.

Saving or recalling user presets

To save or recall user presets, do the following:

1. Click one of the user preset buttons (Preset # 1 through 3).
2. Click **Save** to save the preset to that selected number, or click **Recall** to recall the selected preset.

NOTE *Saving a preset, saves the users configuration to the selected preset number. Previous saves to that number are overwritten.*

Saving input presets

NOTE *Input presets store all input settings to one of 128 memory locations, to be recalled via SIS commands. See chapter 4, "SIS™ Programming and Control" for command details.*

To save an input preset, do the following:

1. Click the drop down arrow in the presets field. A list of presets (1 through 128) appears.
2. Scroll to and click on the desired preset number. The preset field shows the preset number selected.
3. Click **Save** to save the preset to that selected number.

Recalling an input preset

To recall an input preset, do the following:

1. Click the drop down arrow in the presets field. A list of presets (1 through 128) appears.

2. Scroll to and click on the desired preset number. The preset field shows the number selected.
3. Click **Recall** to recall the selected preset.

Starting auto image

To start auto image, do the following:

1. Click **Auto Image**. This automatically sizes and centers the selected input image to fill the screen.

Freezing an image

To freeze an image for review or logo use, do the following:

1. Click **Freeze**. The image is frozen and all Picture Adjustments fields are grayed out.

Video Scaler

Use this page to configure the Video Scaler output card (for any input) for the following settings:

- create an input to output tie
- picture adjustments — image color, tint, brightness, contrast, detail, horizontal and vertical positioning, horizontal and vertical sizing, and zoom
- output configurations — resolution, output type, output rate, and sync polarity
- advanced configuration — top and bottom blanking, blue mode, 2:2 pull down, edge smoothing filter, enhancement mode, auto memory, and auto image
- user presets (presets #1-3) — save and recall
- input presets (presets # 1 through 128) — save and recall
- Start Auto image
- Freeze (image)

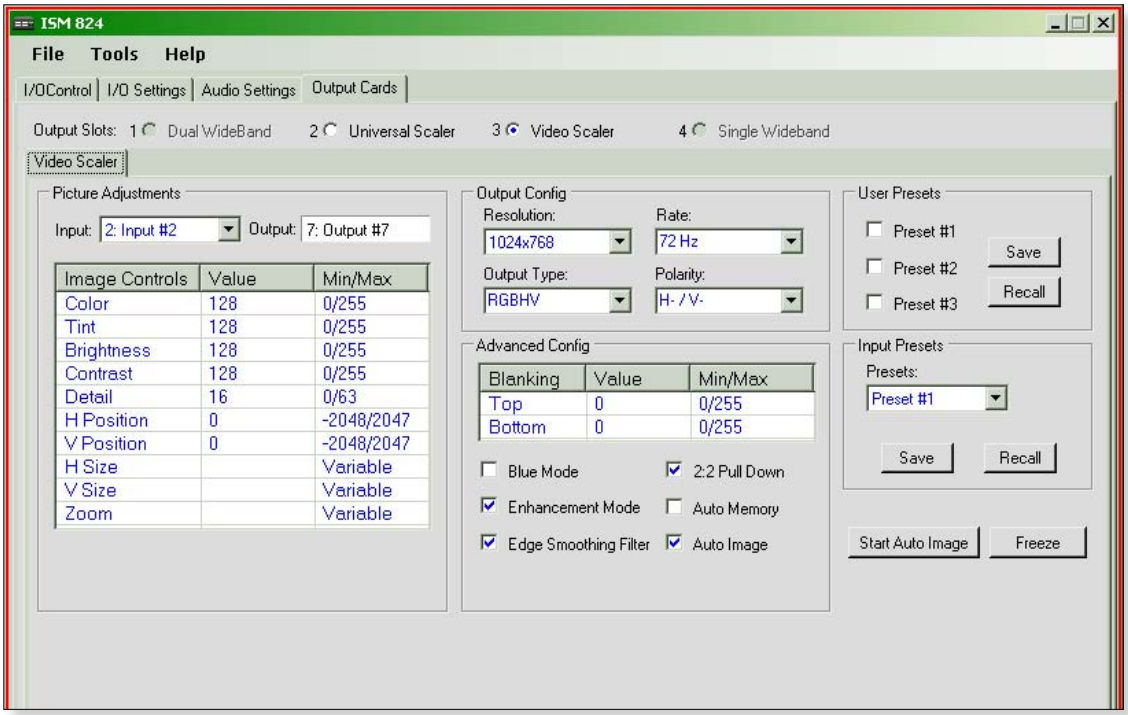


Figure 5-31 — Current Video Scaler output card settings

NOTE *Each input to any output card can have different picture adjustments settings. The image control default settings are 50% of the min/max (see figure 5-31). Some values may be auto detected (e.g. for H and V size), and values that are not available are shown as N/A.*

Making input to output ties

To make input to output ties, do the following:

1. Click the input drop down box and select the input to be tied to the current card.

NOTE *When an input is changed, all the fields on the page refresh to show the current settings for that input. The output number cannot be changed, as this is the output (port) where the card is installed.*

To have no input ties to an output card, select N/A from the inputs list.

Some configurable fields may not be available for the input selected. Those fields show "N/A".

Making picture adjustments

To make picture adjustments, do the following:

1. Click the input drop down arrow and select the input number tied to the output card. The image control fields will refresh.

NOTE *If a different input number was selected, the refreshed fields may have changed values and availability from the previous setting.*

2. Click in the image control value field to be changed. The value field opens and shows two scrolling arrows, except for H and V size and Zoom (see Note below).

NOTE *To change the V(vertical), H (horizontal) size, or Zoom, click on the wide up or down arrows and observe the display until the desired affect is achieved.*

3. For the remaining image controls either; using the arrows, scroll up or down to the desired setting, or directly type in the value. Press Enter. The output's image is set to that level.

NOTE *If a value exceeding the minimum or maximum levels (see Min/Max column) is entered, the program defaults to the minimum or maximum level.*

If a large value change is entered for H position or V position, the image may move outside the viewing area. If this happens, reset to the previous setting and make smaller increments or decrements until the image is as desired.

If an input is not tied to the output card or is a pass through input, all value fields show N/A.

Configuring output resolution, rate, output type, and sync polarity

To configure output resolution, rate, output type, and polarity, do the following:

1. In any of the fields to be changed, click on the drop down arrow and choose the relevant setting. The image control and input settings fields will refresh, reflecting the new output config. settings. The image is displayed with the new settings.

NOTE *If an incorrect output type is selected, the image is not displayed.*

Selecting blue mode, 2:2 Pull down, Edge smoothing filter, Auto image,or Enhancement mode

To select blue mode, 2:2 Pull down, Edge smoothing filter, auto image or enhancement mode from the advanced configuration settings, do the following:

1. To select any of these settings, click the check box alongside the setting name.

NOTE *If blue mode is selected (set to on), only the sync and blue video signal are passed to the display.*

2:2 pull down is greyed out when not available for a selected input signal type

When the edge filter is selected (set to on), it reduces or eliminates aliasing, and the resulting jail bar effect.

When the enhancement mode is selected (set to on), automatic gain control of the video input signal is enabled.

Deselecting or re-selecting auto memory

Auto memory is enabled by default, and should only be disabled if input presets are to be used. See "Saving inputs presets", below for details.

To deselect (or re-select) auto memory, do the following:

1. Click in the Auto memory box. When enabled, the green check mark is shown.

Setting top and bottom blanking values

To set top and bottom blanking values in the advanced configuration settings, do the following:

1. To select any of these settings click in the blanking value field to be changed, the value field will open and show two scrolling arrows.
2. Either; using the arrows, scroll up or down to the desired setting, or directly type in the value. Press Enter. The output's blanking area is set to that value.

NOTE *If a value exceeding the minimum or maximum levels (see Min/Max column) is entered, the program defaults to the minimum or maximum level.*

Saving or recalling user presets

To save or recall user presets, do the following:

1. Click one of the user preset buttons (Preset # 1 through 3).
2. Click **Save** to save the preset to that selected number, or click **Recall** to recall the selected preset.

NOTE *Saving a preset, saves the users configuration to the selected preset number. Previous saves to that number are overwritten.*

Saving input presets

NOTE *Input presets store all input settings to one of 128 memory locations, to be recalled via SIS™ commands. See chapter 4, "SIS™ Programming and Control" for command details*

To save an input preset, do the following:

1. Click the drop down arrow in the presets field. A list of presets (1 through 128) appears.
2. Scroll to and click on the desired preset number. The preset field shows the preset number selected.
3. Click **Save** to save the preset to that selected number.

Recalling an input preset

To recall an input preset, do the following:

1. Click the drop down arrow in the presets field. A list of presets (1 through 128) appears.
2. Scroll to and click on the desired preset number. The preset field shows the number selected.
3. Click **Recall** to recall the selected preset.

Starting auto image

To start auto image, do the following:

1. Click **Auto Image**. The auto image feature automatically sizes and centers the selected input image to fit the screen.

Freezing an image

To freeze an image for review or logo use, do the following:

1. Click **Freeze**. The image is frozen and all Picture Adjustments and Top and Bottom Blanking fields are grayed out.

Button Label Generator

The Button Label Generator software creates labels that can be placed in the translucent covers of front panel buttons. Labels can be created with names, alphanumeric characters, or even color bitmaps for easy and intuitive input and output selection.

The Extron Button Label Generator is available on the Extron Web site, **www.extron.com**, under the Download tab. Click the Control Software link, and select Button Label Generator (figure 5-31), and download and install the program.

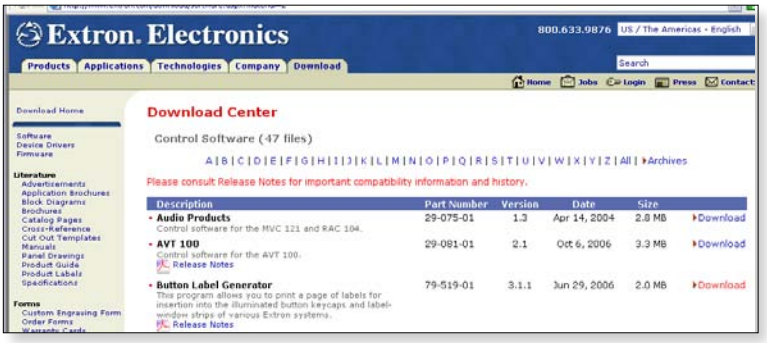


Figure 5-32 — Location of Software on the web site.

By default, the Windows installation creates a C:\Program Files\Extron\ ButtonLabelGenerator directory to place the Button Label Generator icon within.

Using the Button Label Generator software

1. To run the Button Label Generator program either click on the desk top icon, where installed, or, select Start > All Programs >Extron > Button Label Generator >Button Label Generator. The Button Label Generator window opens.
2. In the System drop down box, select ISM 824, and the window refreshes with the ISM 824 front panel button images (see figure 5-33).

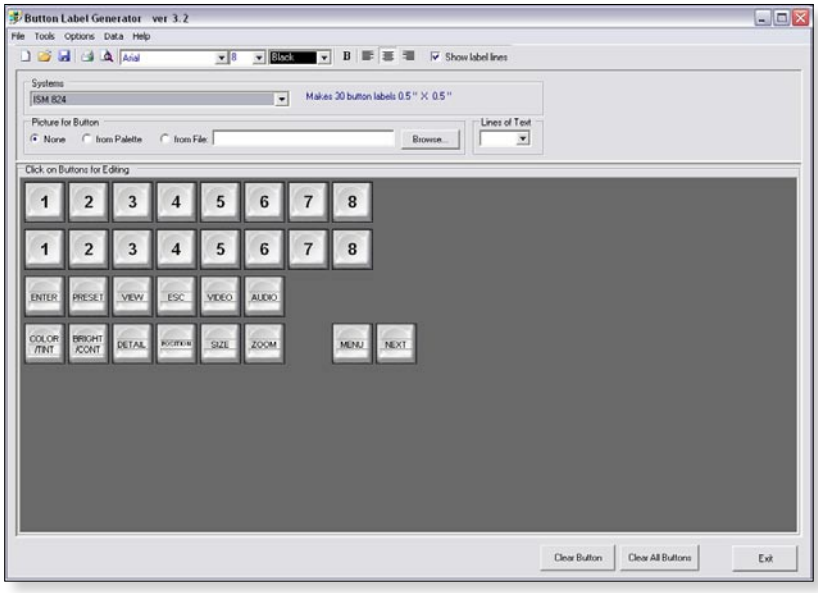


Figure 5-33 — Extron's Button Label Generator window for the ISM 824

3. Within this window, click on a desired button to edit. A red square appears over the button in which text (2 characters maximum on input and output buttons) can be typed.
4. If an image or icon is to be used on the button, check the from Palette or from File buttons, and click browse to locate the image source.
5. When the image is located, click **Open.** The image appears on the button.

NOTE *Press Clear Button or Clear All buttons to create new labels as many times as necessary to make all of the button labels that you need.*

6. When all edits are complete, select File, Print, and print the labels to a local printer.

NOTE *A complete sheet of labels is printed, regardless of the number of buttons that have been edited.*

7. Cut out each label as applicable, and exchange the existing labels on the ISM's front panel buttons, as shown below.

Replacing the button labels

Once the labels are printed, the front panel button translucent covers can be removed to insert the new labels. To replace the label do the following:

1. Insert the flat-head end of an Extron tweeker or small screwdriver alongside the button and gently lever off the (two-piece) button cap (see figure 5-34) from the base.

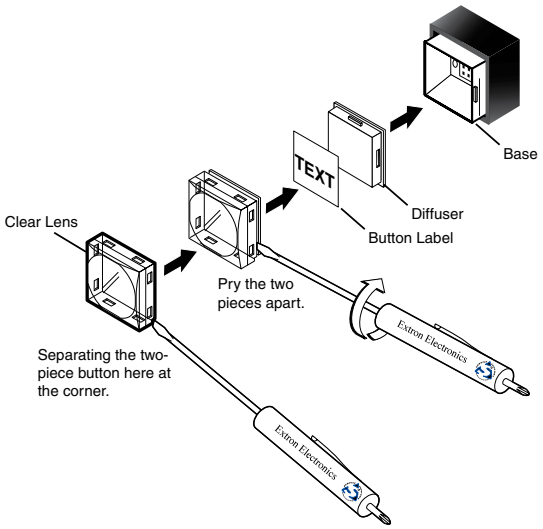


Figure 5-34 — Remove the button cap to replace the label

2. Separate the cap into the lens and diffuser insert the flat-head end of an Extron tweeker or small screwdriver into the corner hole in the cap and turn until the two pieces come apart (see figure 5-34).

3. Remove and replace the label as desired.

4. Press the lens and diffuser together and push the cap firmly back onto the base.

6

Chapter 6

HTML Operation

Downloading the Startup Page

System Status Page

Configuration Pages

File Management Page

Control Pages

Special Characters

HTML Operation

The multiswitcher can be controlled and operated through its LAN port, connected via a LAN or WAN, using a web browser such as Microsoft's Internet Explorer or the Firefox browser. The browser's display of the multiswitcher's status or operation has the appearance of web pages. This chapter describes the factory-installed HTML pages, which are always available and cannot be erased or overwritten.

NOTE *If your Ethernet connection to the ISM 824 is unstable, try turning off the proxy server in your Web browser. In Microsoft's Internet Explore, click Tools > Internet Options > Connections > LAN Settings, uncheck the "Use a proxy server..." box, and then click* **OK.**

Downloading the Startup Page

To access the ISM 824 using HTML pages do the following:

1. Start the Web browser program.
2. Click in the browser's Address field.
3. Enter the unit's IP address in the browser's Address field.

NOTE *If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.*

4. If you want the browser to display a page other than the default page (such as a custom page that you have uploaded), enter a slash (/) and the file name to open.

NOTE *The browser's Address field should display the address in the following format: xxx.xxx.xxx.xxx/{**optional**_file_name.html}*

NOTE *The following characters are invalid in file names: {space} + ~ , @ = ' [ ] { } < > ' " ; : \| \ and ?.*

5. Press the keyboard Enter key. The switcher checks to see if it is password protected.

   If the switcher is not password protected, proceed to step **7**.

   If the switcher is password protected, the switcher downloads the Enter Network Password page (figure 6-1).

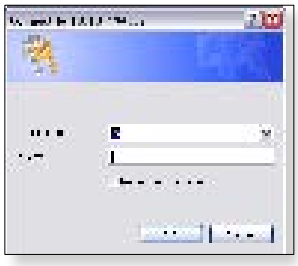


Figure 6-1 — Enter Network Password page

NOTE *A User name entry is not required.*

6. Click in the Password field and type in the appropriate administrator or user password. Click the OK button.
7. The multiswitcher checks several possibilities, in the following order, and then responds accordingly:

   - Does the address include a specific file name, such as 10.13.192.32/file_name.html? **If so**, the switcher downloads that HTML page.

- Is there a file in the switcher's memory that is named "index.html"? **If so**, the switcher downloads "index.html" as the default startup page.
- **If neither of the above conditions is true**, the switcher downloads the factory-installed default startup page, "nortxe_index.html" (figure 6-2), the System Status page.

NOTE *On password-protected connections, there are two levels of protection: administrator and user.*

Administrators have full access to all pages described in this chapter and all switching capabilities and editing functions.

When you are logged on as a user, only the Status and Control tabs are shown on the Web pages.

System Status Page

The System Status page (figure 6-2) provides an overall view of the status of the ISM 824 multiswitcher, including firmware versions, output cards installed, and serial port settings. The System Status page is the default page that the switcher downloads when you connect to the switcher. To access this page while viewing any other page, click the **Status** tab.

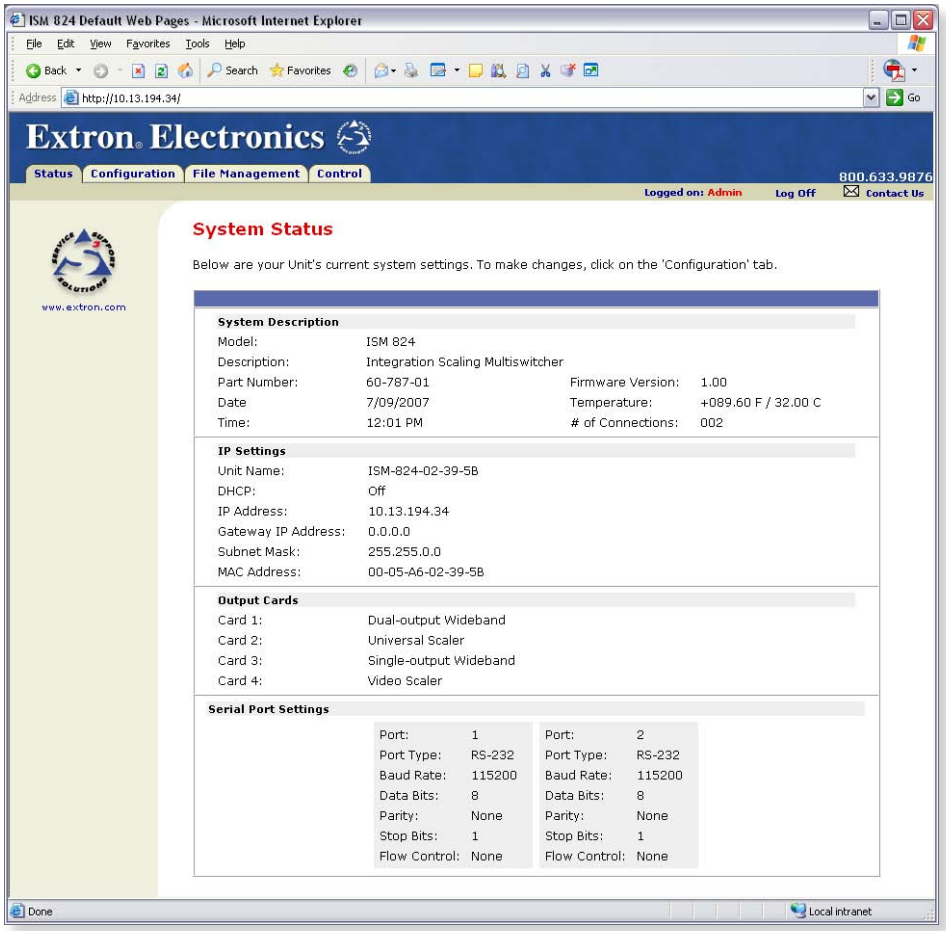


Figure 6-2 — System Status page

The System Status page does not automatically update. If you want to see an update, click the Refresh button on your Web browser.

Configuration Pages

Click on the Configuration tab, to download the ISM's configuration pages. These pages gives access to the system settings, ISM settings, passwords, email settings, and to the Firmware Upgrade facility. All the pages within the Configuration series have fields which can be edited to allow changes to the system settings, the unit settings, administration settings, and to select firmware to upgrade the unit. Individual configuration pages can be accessed by clicking the appropriate link in the column on the left side of the page.

The initial screen displayed shows the System Settings page (see figure 6-3).

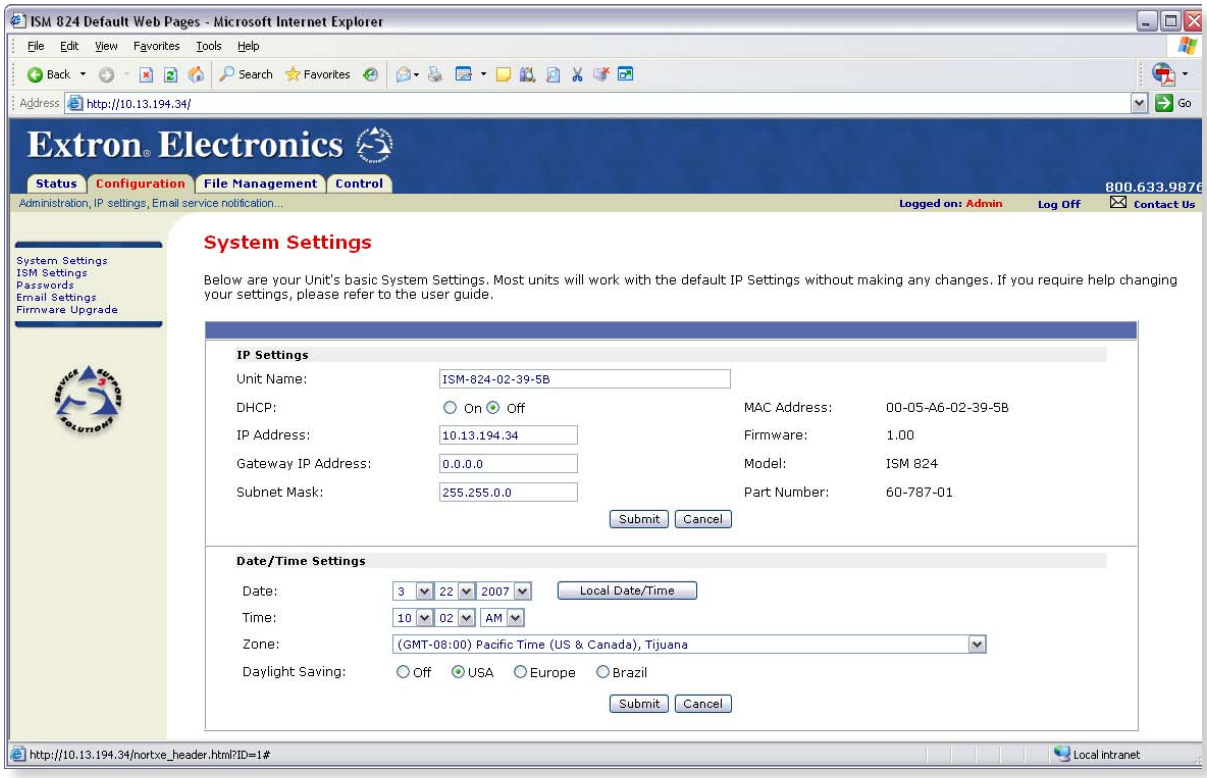


Figure 6-3 — Configuration — System Settings

System Settings page – IP Settings fields

The IP Settings fields provide a location for viewing and editing settings unique to the ISM/Ethernet interface. After editing any of the settings on this page, click **Submit** at the bottom of the section. The screen refreshes and the unit is updated.

NOTE *If an error is made during field editing and **before** submitting, click* **Cancel**. *The screen refreshes with the previous entries. The unit is not updated.*

Some fields are not changeable

Unit Name field

The Unit Name field contains the name used as the "from" information when the switcher e-mails alerts. This name field can be changed to any valid name, up to 24 alphanumeric characters.

NOTE *The following characters are invalid in the name:*
+ ~ , @ = ' [ ] { } < > ' " ; : \| \ and ?.

DHCP radio buttons

The DHCP On radio button directs the ISM to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable). The DHCP Off radio button turns DHCP off. Contact the local system administrator to determine the correct choice for this setting.

IP Address field

The IP Address field contains the IP address of the connected switcher. This value is encoded in the switcher's flash memory.

NOTE *For further information on about IP addresses and subnetting see appendix A, "Ethernet Connection".*

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

The factory-installed default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE *IP address changes can cause conflicts with other equipment. Only local system administrators should change IP addresses.*

Gateway IP Address field

The Gateway IP Address field identifies the address of the gateway to the mail server to be used if the switcher and the mail server are not on the same subnet.

The gateway IP address has the same validity rules as the system IP address.

Subnet Mask field

The Subnet Mask field is used to determine whether the switcher is on the same subnet as the mail server when you are subnetting. For more information, see "Subnetting — A Primer", in appendix A, "Ethernet Connection".

MAC Address field

The Media Access Control (MAC) Address is hardcoded in the switcher and cannot be changed.

Firmware field

This field shows the firmware version number. This field only changes when the firmware is updated.

Model field

This field show the model (ISM 824) and cannot be changed.

Part Number field

This field show the ISM 824 part number (60-787-01) and cannot be changed

System Settings page – Date/Time Settings fields

The Date/Time Settings fields (figure 6-4) provide a location for viewing and setting the time functions. The adjustable variables are month, day, year, hours, minutes, AM/PM, and (time) zone.

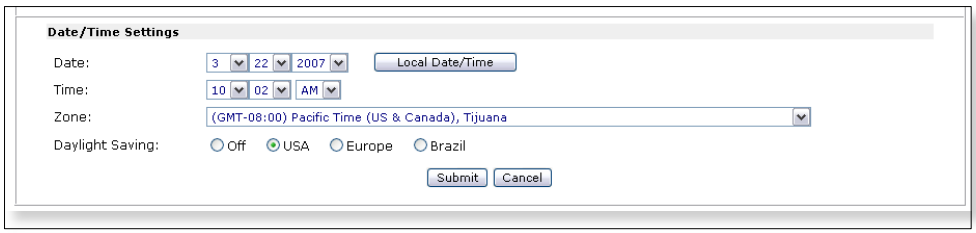


Figure 6-4 — Date/Time Settings fields

Change the date and time settings as follows:

1. Click the desired variable's drop box. A drop down scroll box appears.
2. Click the desired value.

NOTE *For quick setting of the date and time, click the* **Local Date/Time**.

Click **Cancel** *at any point before submitting to exit any field changes. The unit is not updated with those changes The screen refreshes and shows the current device settings.*

3. Repeat steps **1** and **2** for all variables that need to be changed.
4. If appropriate, select the Daylight Savings radio button for the ISM's region, to turn on the daylight savings time feature.

NOTE *When a locations daylight savings time is turned on, the switcher automatically updates its internal clock between Standard Time and Daylight Savings Time in the spring and fall on the date that the time change occurs in the country or region selected. When Daylight Savings Time is turned off, the switcher does not adjust its time reference.*

5. Select the Zone variable that is relevant for the ISM's location.

NOTE *The Zone field identifies the standard time zone selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.*

5. Click **Submit**. The device is updated with the new settings.

ISM Settings page

To access the ISM Settings page click on the ISM Settings link on the left side of any of the Configuration pages. The three sections on this page allow the following settings to be made:

- The video type and audio gain values (in dB) for each input (figure 6-5).
- The RGB delay (in seconds) for each output.
- The Executive Mode (front panel lockout).

NOTE *See chapter 3, "Operation and Setup," for descriptions of the page settings.*

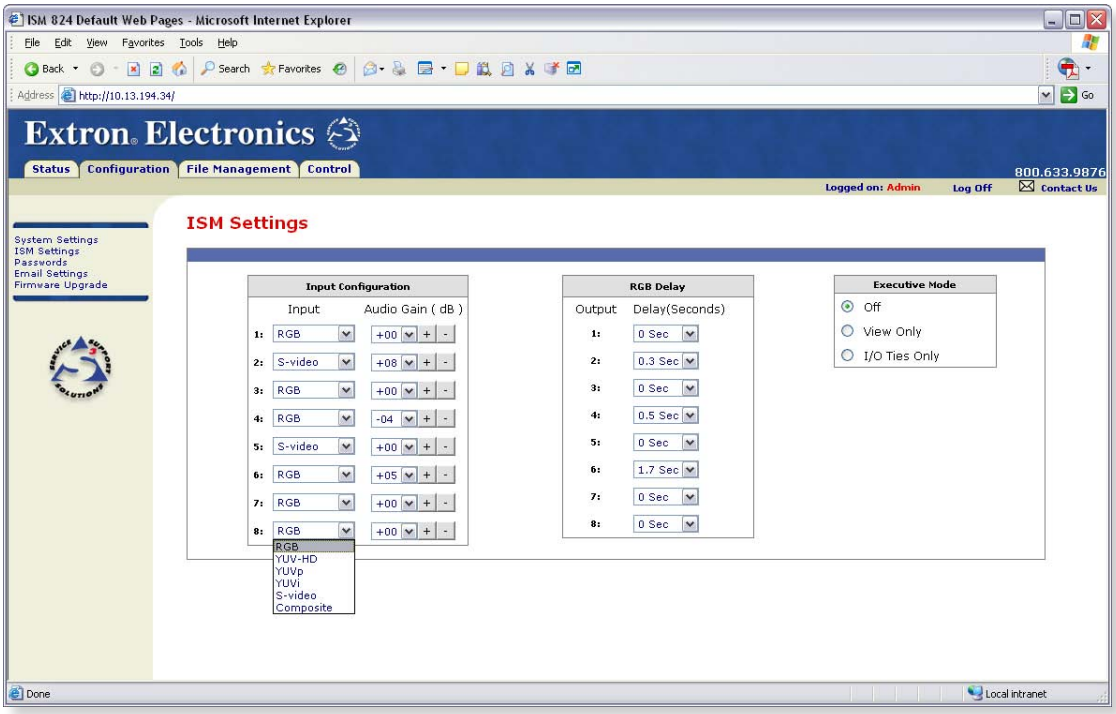


Figure 6-5 — ISM Settings page

Input configuration

Each input field has a drop down box associated with it. To configure an input do the following:

1. Click on an input's drop down box in the Input column, for a list of input video formats (RGB, YUV-HD, YUVp, YUVi, S-video, and composite) available for selection (see figure 6-5).
2. Scroll down to the desired format and click. The device updates to the selected video format.
3. Click on the selected input drop down box in the Audio Gain column, for a list of audio gain settings, from -18 to + 24 dB, in 1 dB steps.
4. Scroll down to the desired level and click. The device updates to the selected level.

NOTE *Alternatively use the + and - buttons to increment or decrement the level 1 dB at a time.*

RGB delay

Each output field has a drop down box associated with it. To set an output's RGB delay do the following:

1. Click on an output's drop down boxes for a list of RGB delay settings, from 0 to 5.0 seconds, in 0.1 second steps.
2. Scroll down to the desired setting and click. The device updates to the selected output RGB delay.

NOTE *RGB delay is used when switching among inputs for the same output. The RGB video output is blanked by the ISM before locking onto the new input signal. This allows a brief delay for the displays to adjust to the new sync timing before displaying the new picture, which then appears without glitches.*

Executive mode

The Executive Mode section has three selectable levels;

- Off – full front panel access and menus are available
- View only – ties cannot be created or broken and menus are not available.
- I/O ties only – ties can be created or broken but menus are not available.

To set an Executive mode do the following:

1. Click the radio button for the desired executive mode level. The device is updated to that level.

Passwords page

To access the Passwords page click on the Passwords link on the left side of any of the Configuration pages. The four fields on this page are for entering and verifying administrator and user passwords (see figure 6-6).

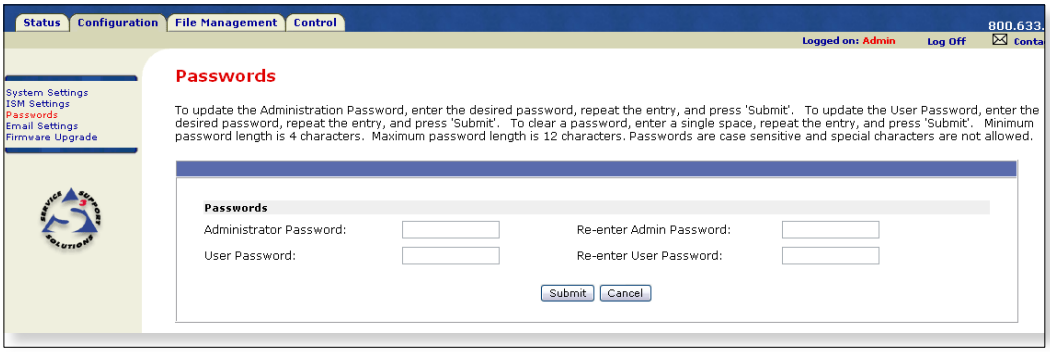


Figure 6-6 — Passwords page

Passwords are case sensitive and are limited to 12 uppercase and lowercase alphanumeric characters. Each password must be entered twice; once in the Password field and then again in the Re-enter Password field. Characters in these fields are masked by asterisks (*****). If you do not want to password protect an access level, leave the Password field and the Re-Enter password field blank. After entering the desired password in both fields, click the Submit button.

NOTE *An administrator password must be created before a user password can be created.*

To clear an existing password so that no password is required, delete the asterisks, enter a single space in the Password and Re-enter Password fields, and click **Submit**.

Email Alerts page

To access the the Email Alerts page click on the Email Alerts link on the left side of any of the Configuration pages. The Email Alerts page is used to set up the device to automatically send e-mail alert messages when settings are changed on the ISM 824. Up to 64 e-mail addresses can be addressed to alert recipients that any particular event has occurred. Each addressee can receive the same or different alerts for differing events.

SMTP (Simple Mail Transfer Protocol) authorization can be specified as necessary for the ISM to accept incoming e-mail. This prevents spam from taking up space in the device's e-mail system.

For the e-mail settings and for each row of the e-mail notification settings, click **Edit** to make the fields available for editing (see figure 6-7). The button changes to Save. After editing the settings associated with the Edit/Save button, click **Save**.

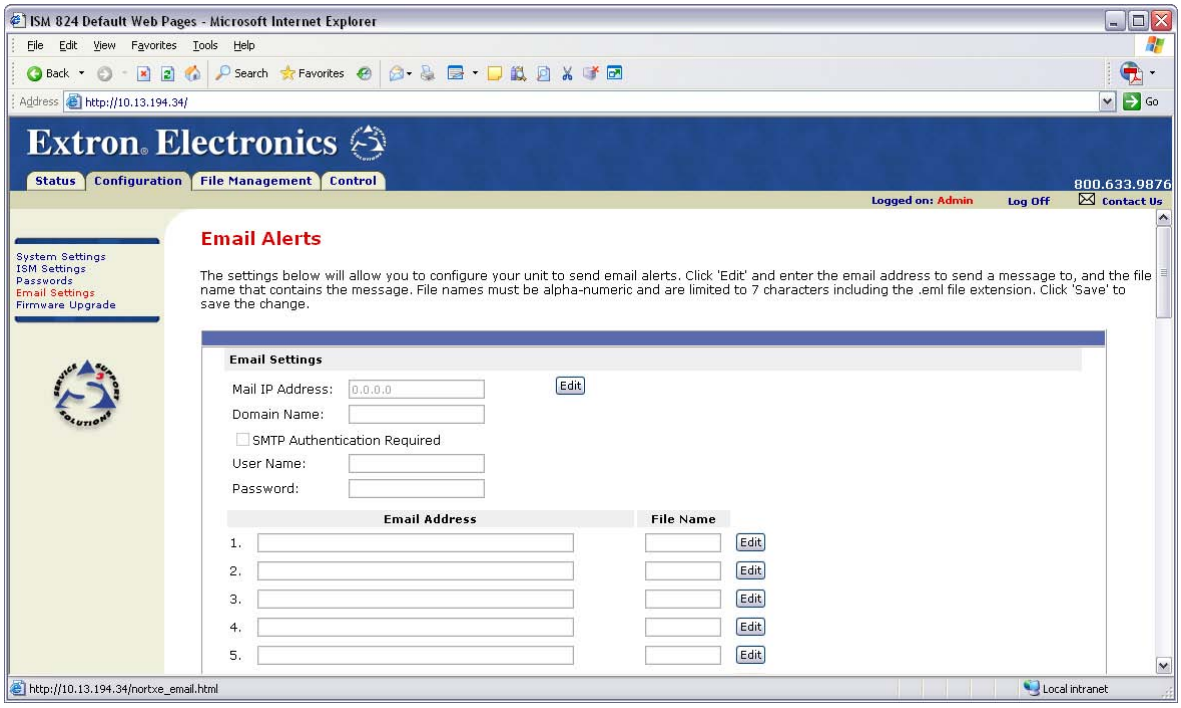


Figure 6-7 — Email Alerts page

Setting up e-mail alerts

Set the ISM to send e-mail alerts when settings are changed as follows:

1. On the Email Alerts screen, click **Edit** located to the right of the Mail IP Address and Domain Name fields. The button changes to Save.
2. If your domain user name has a password assigned, enter it.
3. Click **Save**.

To set up e-mail addresses for notification, do the following for each recipient of e-mail alerts:

1. Click **Edit**. The Edit button changes to Save.
2. Enter the e-mail address of the recipient, and the file name on the host PC (*.eml extension) that contains the message.
3. Click **Save** to save the changes. The Save button changes back to Edit.

Setting up SMTP authorization

To set the ISM 824 to require SMTP authorization before accepting any e-mail, do the following:

1. Click **Edit**. The button changes to Save.
2. Check the SMTP Authorization Required check box, located below the Domain Name field. This enables the User Name and Password fields below the check box.

3. Enter a user name and a password in the User Name and Password fields. For the ISM to accept their e-mail messages, senders must enter the user name and password.

NOTE *For the User name, any combination of letters, numerals, spaces, and symbols* **except** *the comma (,) and the single and double quotation marks (' and ") can be used. For the password, all characters except the comma can be used. The user name and password can each be from 1 to 30 characters.*

NOTE ***Both*** *a user name and a password must be specified.*

4. Click **Save** to save the user name and password.

To remove SMTP authorization, click **Edit**, click (deselect) the SMTP Authorization Required check box, then click **Save**.

Firmware Upgrade page

To access the Firmware Upgrade page (figure 6-8) by click on the Firmware Upgrade link on the left side of any of the Configuration pages.

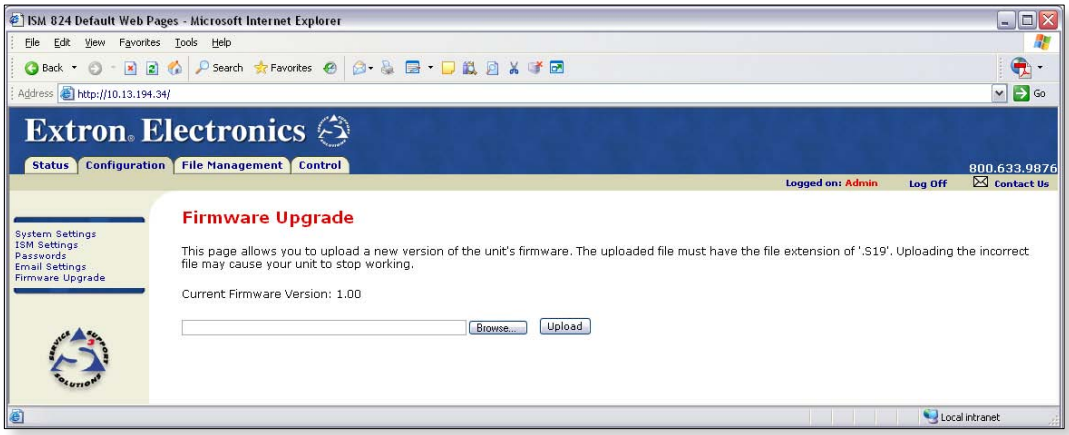


Figure 6-8 — Firmware Upgrade page

The Firmware Upgrade page provides a way to replace the firmware that is coded on the switcher's control board without taking the switcher out of service, opening the switcher enclosure, and replacing the firmware chip.

NOTE *The Firmware Upgrade page is* ***only*** *for replacing the firmware that controls all switcher operation. To insert your own HTML pages, see "File Management Page", on page 6-12.*

To upgrade the ISM 824 multiswitcher's firmware, the latest firmware version has to be downloaded to the host PC from the Extron web site (**www.extron.com**).

To download the firmware to the host PC, do the following:

1. Visit the Extron web site, **www.extron.com**, and click the **Download** tab.

2. Click the Firmware link (figure 6-9).

Figure 6-9 — Location of firmware upgrade files on the Extron web site

3. Select the ISM 824 firmware file to download and save it to the host PC.

NOTE *Valid firmware files must have the file extension ".S19". Any other file extension is **not** a firmware upgrade.*

4. In the Windows Explorer or other file browser, double-click the downloaded executable (*.exe) file) to self-extract the firmware file to the PC.
5. If not done already, connect the PC to the ISM 824 via the switcher's LAN port.
6. Access the ISM 824 using HTML pages as described on page 6-2.
7. Click the **Configuration** tab.
8. Click the Firmware Upgrade link (see figure 6-9).
9. Click **Browse**. An open file window appears.
10. Navigate to the folder where the saved firmware upgrade file resides. Select the file.

NOTE *Valid firmware files must have the file extension ".S19". Any other file extension is **not** a firmware upgrade.*

The original factory-installed firmware is permanently available on the ISM 824 switcher. If the attempted firmware upload fails for any reason, the device automatically reverts to the factory-installed firmware.

11. Click **Open**.
12. Click **Upload** on the Firmware Upgrade page. The firmware uploads to the ISM 824 and the device restarts. This may a few minutes.

File Management Page

To delete files such as logo bitmaps from the multiswitcher or to upload your own HTML files to the device, click the File Management tab. The multiswitcher downloads the file management HTML page (figure 6-10).

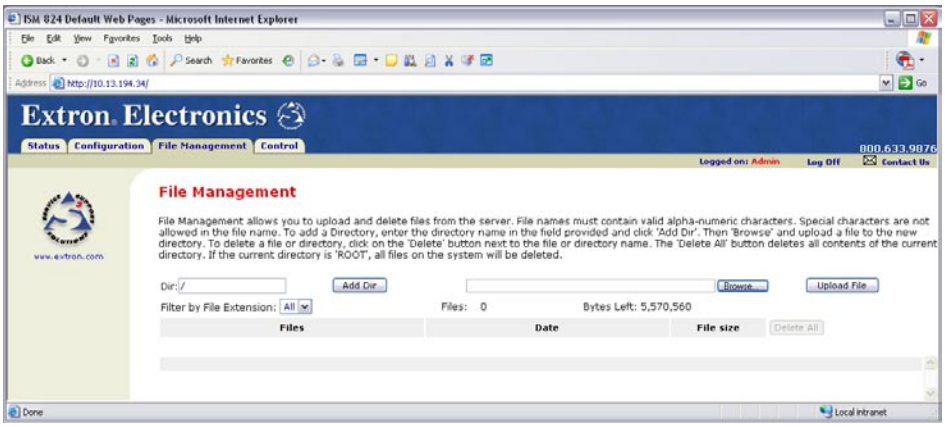


Figure 6-10 — File Management page

To upload files, do the following:

NOTE *The following characters are invalid in file names: {space} + ~ , @ = ' [ ] { } < > ' " ; : \| \ and ?.*

1. Enter the new directory name in the Dir:/ field.
2. Click **Add Dir**. This creates a new directory to upload the files to.
3. Click **Browse**.

   Browse through the host PC system and select the desired file(s).

NOTE *If a custom created page is uploaded in order to be the default startup page, name that file "index.html".*

4. Click **Upload File**. The selected file(s) are uploaded to the new (current) directory and appear in the list.

NOTE *A filter can be applied to list files in the current directory by extension.*

5. To delete a directory or a file, click **Delete** next to the name. A confirmation prompt appears.

NOTE *To delete all the contents of the current directory, click* **Delete All**. *If the current directory is "ROOT", all files on the system will be deleted.*

Control Pages

To access the Control pages, click the Control tab from any other page. These pages allow configuration and viewing of input to output ties, setting and viewing output volume levels and muting status, auto image and image freeze selection, saving and recalling I/O preset, and specific configuration of individual output cards and image adjustment. The Control pages initially open on the User Control page.

User Control page

Limited device configurations can be made from the User Control page (figure 6-11).

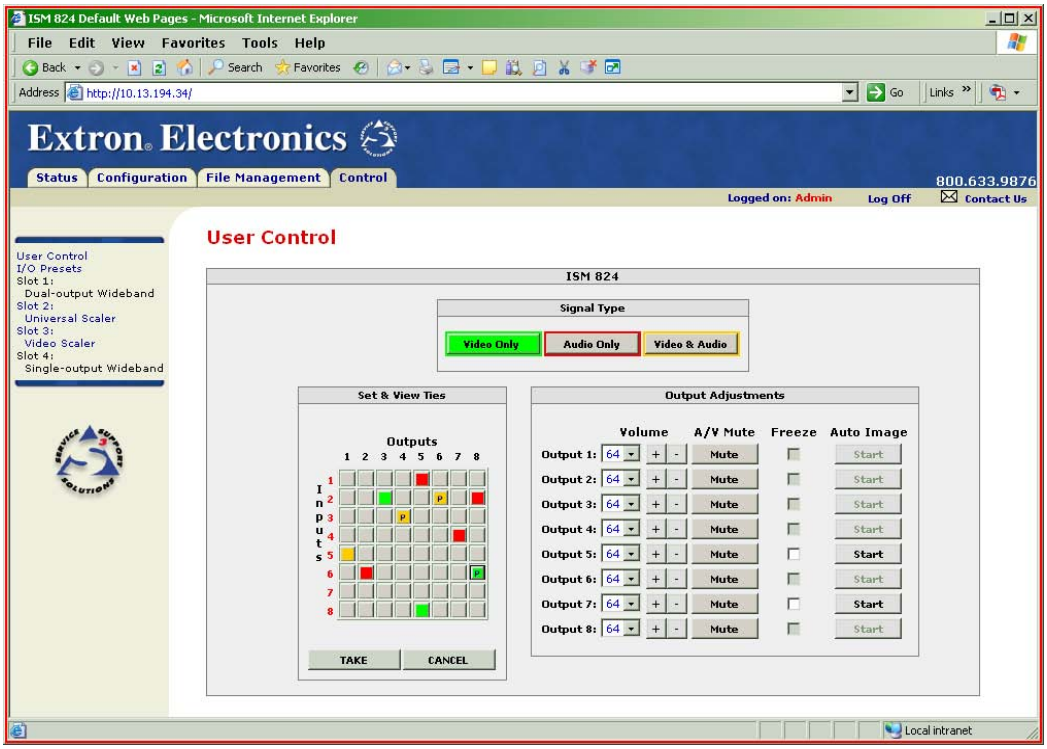


Figure 6-11 — Control pages — User Control page

The User Control page emulates some of the ISM 824 front panel features and displays the current input selections, output volume, A/V mute status, image freeze and auto image settings. See chapter 3, "Operation and Setup," for descriptions of the settings on this page.

To set or replace ties, do the following:

1. In the signal type field, click **Video only**, **Audio only**, or **Video & Audio** depending on the signal type to be tied.

NOTE *When viewing the ties on the User Control page, video ties are shown green, audio ties are red, and video and audio ties amber (see figure 6-11).*

2. Click the desired input/output button in the Set & View Ties map. The button changes color according to signal type and indicates a provisional tie with a letter "P" (see figure 6-11, input #1, output #5, for example).

NOTE *An existing tie is replaced in favor of the new tie.*
Click **Cancel** *to abandon changes and revert back to the existing ties.*

3. Click **Take** to make the tie. The page refreshes, the letter P disappears from the button and the ISM 824 is updated with the new tie.

To remove ties, do the following:

1. In the signal type field, click **Video only**, **Audio only**, or **Video & Audio** depending on the signal type to be removed.
2. Click the input/output button of the tie to be removed. The button changes color and indicates a provisional tie with a letter "P" (see figure 6-11).

NOTE *If a video is removed from an video/audio tie, the button turns red (from amber).*

If an audio tie is removed from an video/audio tie, the button turns green (from amber).

If a single signal tie (video or audio) is removed, or a combined signal (when the video & audio signal type button is highlighted), the button turns gray (see figure 6-12, input #6, output #7, for example, video and audio tie provisionally removed).

3. Click **Take** to make the tie. The screen refreshes, the letter "P" disappears from the button and the ISM 824 is updated, removing the selected tie.

To set output volume levels, do the following:

1. In the Output Adjustments section, click in the desired output volume field. A drop down value list (0 to 64) appears (see figure 6-12).

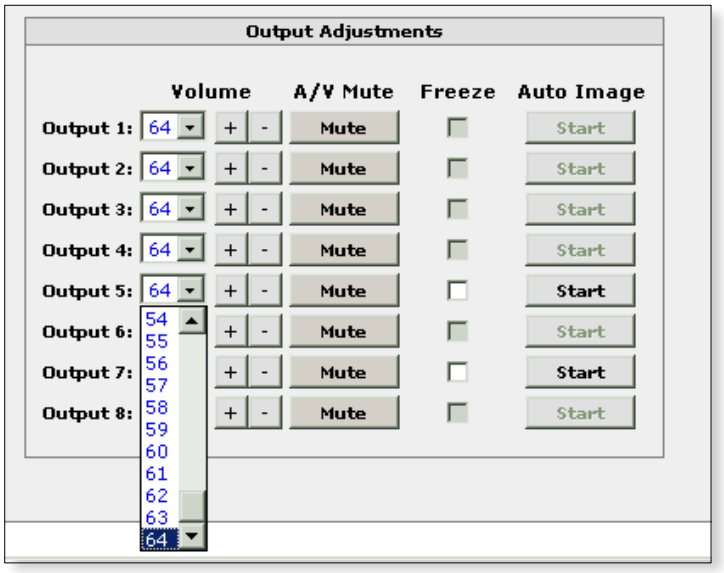


Figure 6-12 — Click in an output field to see the drop down list

2. Scroll down to the desired level and click. The page refreshes and the device updates to the selected level.

NOTE *Alternatively use the + and - buttons to increment or decrement the level just 1 step at a time. The page refreshes every time the + or - buttons are clicked on, and the device updates with each step change.*

To mute or unmute a signal, do the following:

1. In the signal type field, click **Video only**, **Audio only**, or **Video & Audio** depending on the signal type to be muted
2. Click **Mute** for the output to be muted. The gray button changes color according to the muted signal (see Note and figure 6-13), and shows "muted". The page refreshes and the ISM 824 updates with the selection.

NOTE *If the output is muted for audio, the button shows red.*
If the output is muted for video, the button shows green.
If the output is muted for video and audio, the button shows amber.

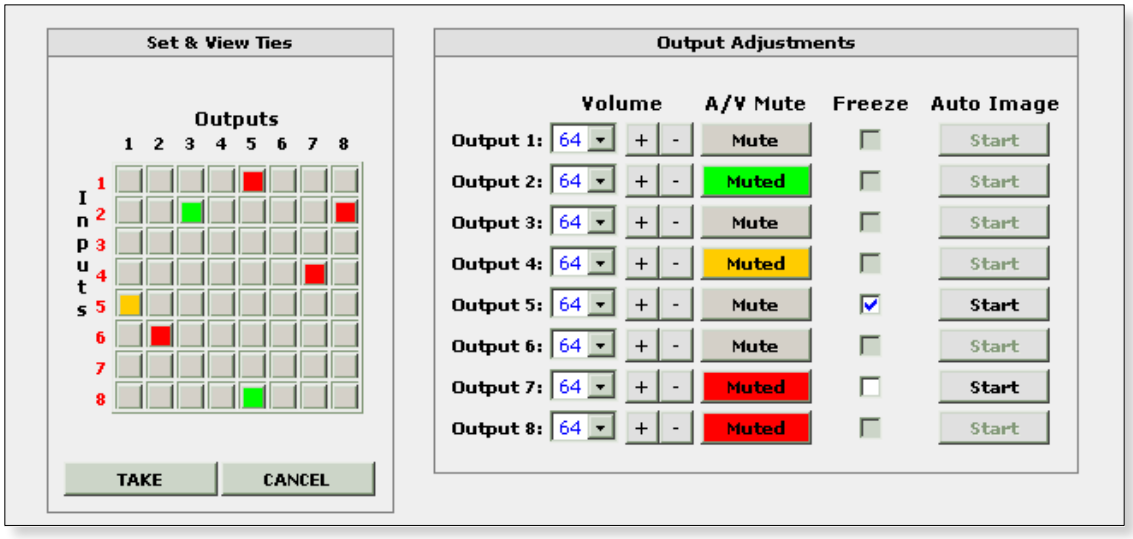


Figure 6-13 — A/V mute buttons status according to signal type

To freeze an output image, do the following:

1. Click in the Freeze check box. The page refreshes and the device is updated.

NOTE *This feature is not available for pass-through outputs and wideband cards.*

To start Auto Image for an output, do the following:

1. Click **Start** in the Auto Image column against the desired output. The page refreshes and the device starts Auto Image mode for that selected output.

NOTE *This feature is not available for pass-through outputs and wideband cards.*

I/O Presets page

To access the I/O Presets page, click on the I/O Presets link on the left side of any of the Control pages. The page opens showing the current saved presets. This page is used to save and recall any of up to sixteen I/O presets (figure 6-14), and to configure certain output cards installed in slots 1 through 4.

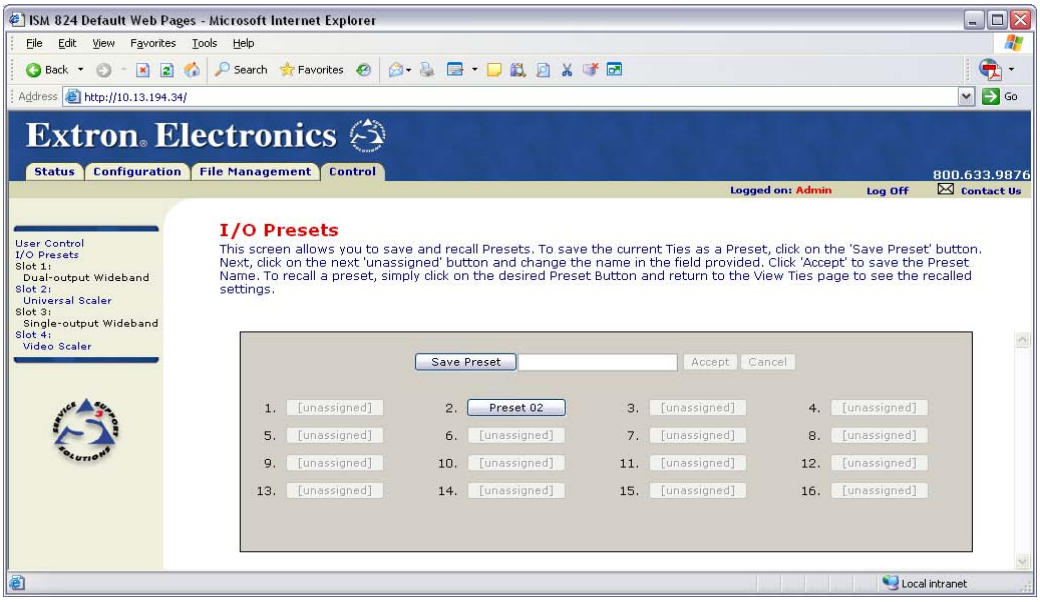


Figure 6-14 — I/O Presets page

To save a preset, do the following:

1. Click **Save Preset**. The button changes to **Select Preset...**, and all unassigned buttons become visible (see figure 6-15).

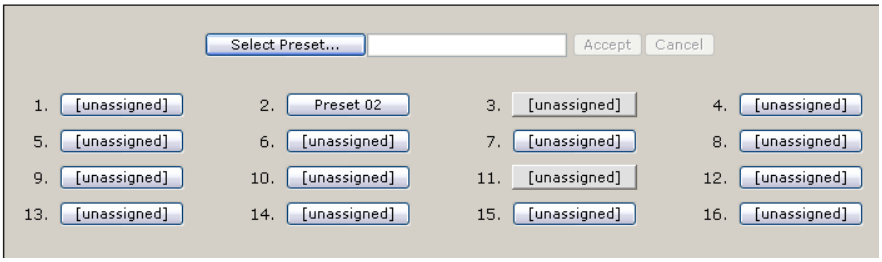


Figure 6-15 — Select an unassigned preset button

2. Click on the next unassigned number, or if all presets are taken, any preset button. The preset button is highlighted, and the **Select Preset...** button disappears. The Accept/Cancel buttons become visible (see figure 6-16).

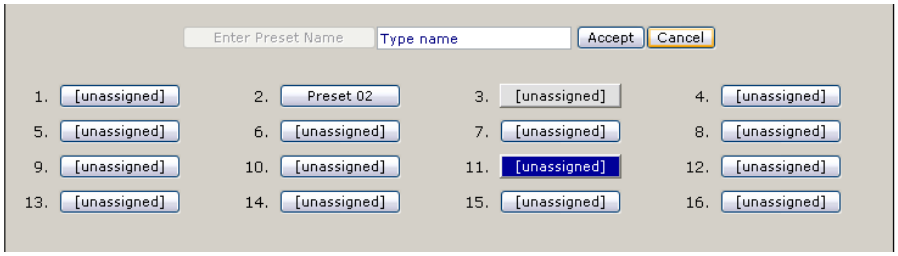


Figure 6-16 — Enter a name into the preset name field

3. Enter a suitable name (maximum 11 characters, including spaces) in the name field.

4. Click **Accept** to name the preset. The page refreshes and the selected button shows the entered name. The **Select Preset...** button reverts to **Save Preset**

NOTE *Click* **Cancel** *at any point before saving, to exit without saving any changes.*

Slot (output card) configuration

There are four slots, numbered 1 to 4, into which an optional output card can be installed. Depending on the card type installed, input and user presets can be saved and recalled on this page. Picture control, input sampling and limited output and advanced configurations can also be made from this page.

The cards that can be configured are: Universal Scaler, Video Scaler, and Scan Converter cards. Wideband cards and pass-through outputs cannot be configured using this Ethernet page. For any particular slot/output card combination, the cards that can be configured are shown in blue text on the left side of the User Control page. Other (not configurable) outputs are shown in black text.

Each configurable card has its own page.

Universal Scaler — ISM RGB

The page for the Universal Scaler is shown below:

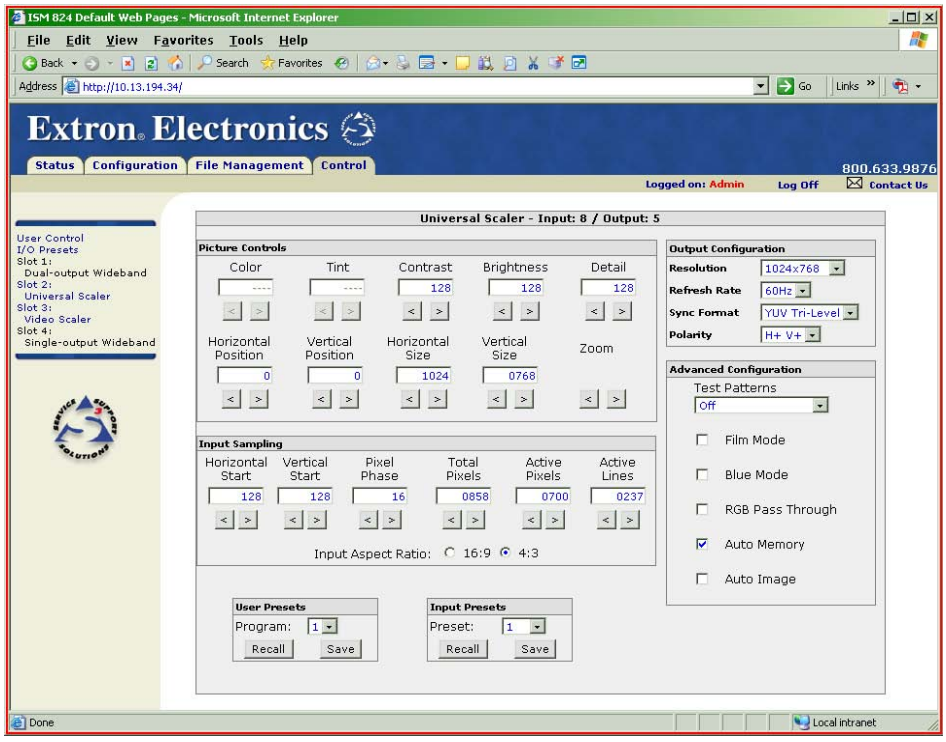


Figure 6-17 — Universal Scaler output card configuration screen

On the top of this page, the input number that is currently tied to the card's output tie is shown (see figure 6-17).

Also from this page adjustments to the following can be made;

- picture controls (color, tint, contrast, brightness, detail, horizontal and vertical position and size, and zoom)
- input samplings (horizontal and vertical start, pixel phase, total and active number of pixels and lines, and input aspect ratio)
- user and input presets can be saved and/or recalled
- output configuration parameters (resolution, refresh rate, sync format, and polarity) can be changed
- advanced configuration settings (test patterns, film mode, blue mode, RGB pass through, auto memory, and auto image) can be turned on or off.

To make picture control adjustments do the following:

1. Within the Picture Controls section, select the setting that is to be changed, and click on either the left arrow (<) to decrease the value, or on the right arrow (>) to increase the value, one step at a time. After every click the page refreshes and shows the new value. The device is updated to the new setting.

NOTE *Alternatively, if the new setting value is known, enter it directly into the field, and press enter. The page refreshes, shows the new value, and the device is updated.*

To adjust the input sampling, do the following:

1. Within the Input Sampling section, select the setting that is to be changed, and click on either the left arrow (<) to decrease the value, or on the right arrow (>) to increase the value, one step at a time. After every click the page refreshes and shows the new value. The device is updated to the new setting.

NOTE *Alternatively, if the new setting value is known, enter it directly into the field, and press enter. The page refreshes, shows the new value, and the device is updated.*

For an aspect ratio other than the one currently displayed (16:9 or 4:3), click on the blank radio button. The button fills and the device is updated to the new setting).

To save and recall presets do the following:

1. Select either the User presets or Input presets drop down arrows as desired (see figure 6-18).

NOTE *There are 3 user presets and 128 input presets. Each preset can be individually configured for the range of adjustments available for that output card.*

2. Click **Save** to save current configuration to that preset number, or click **Recall** to recall that preset as the current configuration.

To change any output configuration parameter, do the following:

1. Within the Output Configuration section, select the setting to be changed, and click on the drop down arrow. A drop down list appears. Scroll down the list the desired value and click. The page refreshes and the new value is shown. The device is updated to the new setting.

To change the advanced configuration settings do the following:

NOTE *The advanced settings for the Universal Scaler card are test pattern selection, film mode, blue mode, auto memory, auto image, and RGB pass through.*

1. For test patterns, click the drop down arrow to see a list. Scroll down to the required test pattern listed, and click. The display shows the selected pattern.

2. Within the Advanced Setting section, click the check boxes of the settings to be turned on or off as desired. The device is updated to the new setting.

Video Scaler — ISM VS

The page for the Video Scaler is shown below:

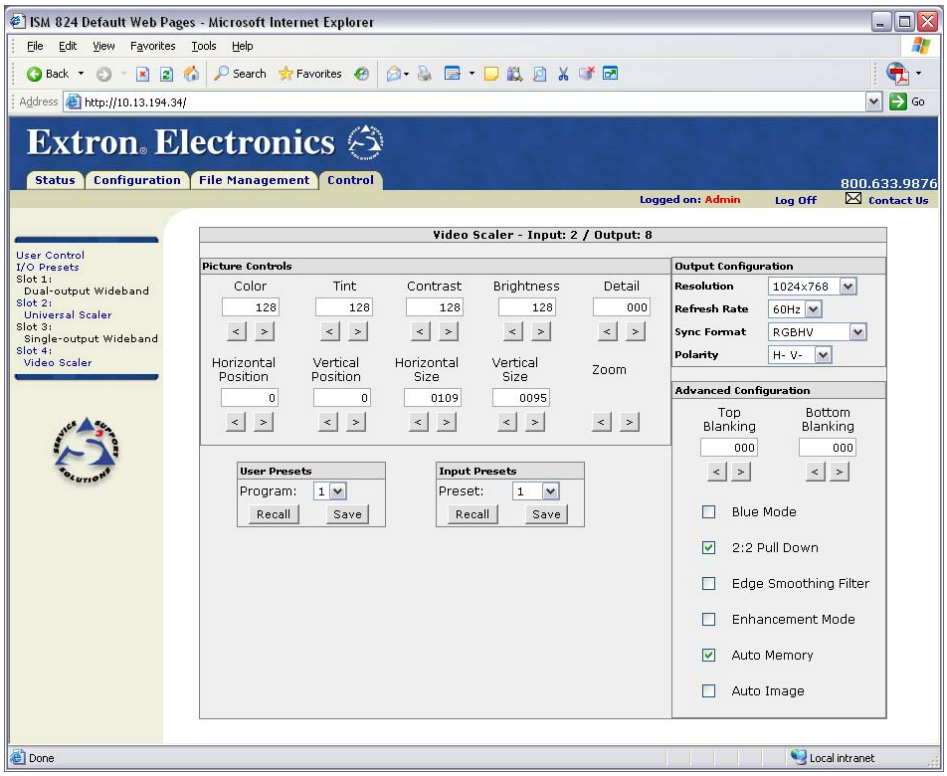


Figure 6-18 — Video Scaler output card configuration screen

On the top of this page, the input number that is currently tied to the card's output tie is shown (see figure 6-18).

Also from this page adjustments to the following can be made;

- picture controls (color, tint, contrast, brightness, detail, horizontal and vertical position and size, and zoom)
- user and input presets can be saved and/or recalled
- output configuration parameters (resolution, refresh rate, sync format, and polarity) can be changed
- advanced configuration settings (top and bottom blanking settings, blue mode, 2:2 pull down, edge smoothing filter, enhancement mode, auto memory, and auto image) can be turned on or off.

To make picture adjustments do the following:

1. Within the Picture Controls section, select the setting that is to be changed, and click on either the left arrow (<) to decrease the value, or on the right arrow (>) to increase the value, one step at a time. After every click the page refreshes and shows the new value. The device is updated to the new setting.

NOTE *Alternatively, if the new setting value is known, enter it directly into the field, and press enter. The page refreshes, shows the new value, and the device is updated.*

To save and recall presets do the following:

1. Select either the User presets or Input presets drop down arrows as desired (see figure 6-18).

NOTE *There are 3 user presets and 128 input presets. Each preset can be individually configured for the range of adjustments available for that output card.*

2. Click **Save** to save current configuration to that preset number, or click **Recall** to recall that preset as the current configuration.

To change the output configuration (resolution, refresh rate, sync format, and polarity) do the following:

1. Within the Output Configuration section, select the setting to be changed, and click on the drop down arrow. A drop down list appears. Scroll down the list the desired value and click. The page refreshes and the new value is shown. The device is updated to the new setting.

To change the advanced configuration settings do the following:

NOTE *The advanced settings for the Video Scaler card are top and bottom blanking, blue mode, 2:2 pull down, edge smoothing filter, auto memory, auto image, and enhancement mode.*

1. For top and bottom blanking adjustment, click the left (<) or right (>) arrows to decrease or increase the blanking area.

NOTE *Alternatively, if the new setting value is known, enter it directly into the field, and press enter.*

2. Within the Advanced Setting section, click the check boxes of the settings to be turned on or off as desired. The device is updated to the new setting.

Special Characters

The HTML language reserves certain characters for specific functions. The switcher does not accept these characters as part of preset names, the switcher's name, passwords, or locally created file names.

The switcher rejects the following characters:
{space (spaces **are** accepted in names)} + ~ , @ = ‘ [ ] { } < > ’ “ ; (semicolon) : (colon) | \ and ?.

Appendix A

Ethernet Connection

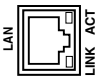
Ethernet Link

Subnetting — A Primer

Ethernet Connection

Ethernet Link

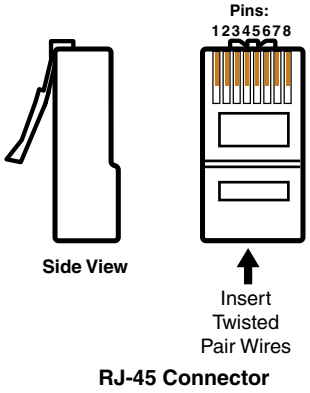
The rear panel Ethernet connector on the ISM 824 can be connected to an Ethernet LAN or WAN. This connection makes SIS control of the switcher possible using a computer connected to the same LAN.



Ethernet connection

The Ethernet cable can be terminated as a straight-through cable or a crossover cable and must be properly terminated for your application (figure A-1).

- **Crossover cable** — Direct connection between the computer and the ISM 824.
- **Patch (straight) cable** — Connection of the ISM 824 to an Ethernet LAN.



Straight-through Cable
(for connection to a switch, hub, or router)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

Crossover Cable
(for direct connection to a PC)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

Figure A-1 — RJ-45 connector pinout tables

Default address

To access the ISM 824 via the LAN port, you need the switcher's IP address. If the address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the Ping utility. If the address has not been changed, the factory-specified default is 192.168.254.254.

Ping can also be used to test the Ethernet link to the ISM 824.

Ping to determine Extron IP address

The Microsoft Ping utility is available at the DOS prompt. Ping tests the Ethernet interface between the computer and the ISM 824. Ping can also be used to determine the actual numeric IP address from an alias and to determine the Web address.

Ping the switcher as follows:

1. On the Windows task bar, click Start > Run.
2. At the Open prompt, type *command.*
3. Click the OK button.
4. At the DOS prompt, type *ping {IP address}* and then press Enter. The computer returns a display similar to figure A-2.

   The line **Pinging ...** reports the actual numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

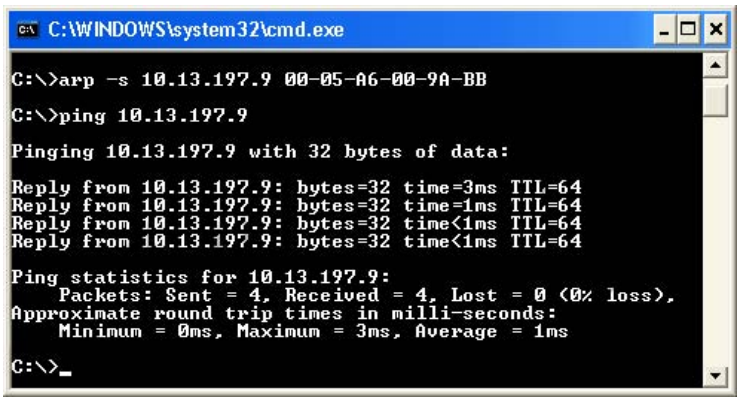


Figure A-2 — Ping response

Ping to determine Web IP address

The Ping utility has a modifier, *-a*, that directs the command to return the Web address rather than the numeric IP address.

At the DOS prompt, type *ping -a {IP address}* and then press Enter. The computer's return display is similar to the Ping response shown in figure A-2, except that when you specify the *-a* modifier, the line **Pinging mail...** reports the web IP address rather than the numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

Connect as a Telnet client

The Microsoft Telnet utility is available from the DOS prompt. Telnet allows you to input SIS commands to the ISM 824 from the PC via the Ethernet link and the LAN.

Access the DOS prompt and start Telnet as follows:

1. On the Windows task bar, click Start > Run.
2. At the Open prompt, type *command*.
3. Click on the OK button.
4. At the DOS prompt, type *telnet* and then press Enter. The computer returns a display similar to figure A-3.

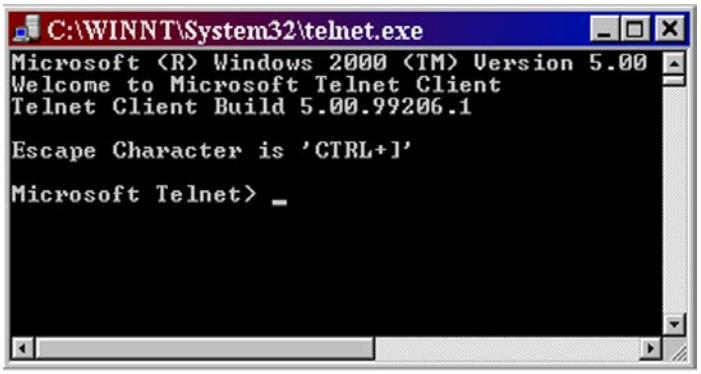


Figure A-3 — Telnet screen

Telnet tips

It is not the intention of this manual to detail all of the operations and functionality of Telnet; however, some basic level of understanding is necessary for operating the ISM 824 via Telnet.

Open

Connect to the ISM 824 using the Open command. Once your computer is connected to the switcher, you can enter the SIS commands the same as you would if you were using the RS-232 link.

Connect to the ISM 824 as follows:

1. At the Telnet prompt, type *open {IP address}* and then press Enter.

   If the switcher is not password protected, no further prompts are displayed until you break or disconnect the connection to the ISM 824.

   If the switcher is password protected, Telnet displays the password prompt.

2. If necessary, at the password prompt, type in your password and then press Enter.

   Connection to the switcher via the Ethernet can be password protected. There are two levels of password protection: administrator and user. A person logged on as an administrator has full access to all ISM 824 switching capabilities and editing functions. Users can select video and/or audio for output, select test patterns, set RGB and audio mutes, select a blue screen, and view all settings with the exception of passwords. By default, the ISM 824 ships with both passwords set to {carriage return}.

   Once you are logged in, the switcher returns either **Login Administrator** or **Login User**. No further prompts are displayed until you break or disconnect the connection to the ISM 824.

Escape character and Esc key

When Telnet is first started, the utility advises that the **Escape character is 'Ctrl+]'**. Many SIS commands include the keyboard Esc key. Consequently, some confusion may exist between the Escape character and the Escape key.

The Telnet Escape character is a key combination, the Ctrl key and the] key pressed simultaneously, that returns you to the Telnet prompt while leaving the connection to the ISM 824 intact.

The Escape key is the Esc key on the computer keyboard.

Local echo

Once connected to the ISM 824, by default, Telnet does not display your keystrokes on the screen. SIS commands are typed in blindly and only the SIS responses are displayed on the screen. To command Telnet to show keystrokes, at the Telnet prompt, type *set local_echo* and then press Enter before you open the connection to the switcher.

With local echo turned on, keystrokes and the switcher's responses are displayed on the same line. For example: **1*1!In1 Out1 All,** where **1*1!** is the SIS command and **In1 Out1 All** is the response.

With local echo turned on, all keystrokes are displayed, even those that should be masked, such as the password entry. For example, when entering a password with local echo turned on, you will see a display such as **a*d*m*i*n***, where **admin** is the keyed in password and ***** is the masked response.

Local echo can be turned off by typing *unset local_echo* and then pressing Enter at the Telnet prompt. If you are connected to the ISM 824 and need to access the Telnet prompt to turn local echo off, type the Escape character (Ctrl+]).

Set carriage return-line feed

Unless commanded otherwise, Telnet transmits a line feed character only (no carriage return) to the connected switcher when you press the Enter key. This is the correct setting for SIS communication with the switcher. The Telnet *set crlf* command forces Telnet to transmit carriage return and line feed characters when Enter is pressed, but if crlf is set, the SIS link with the switcher will not function properly.

Close

To close the link to the switcher, access the Telnet prompt by typing the Escape character (Ctrl+]). At the Telnet prompt, type *close* and then press Enter.

Help

For Telnet command definitions, at the Telnet prompt, type *?* and then press Enter.

Quit

Exit the Telnet utility by typing *quit* and then press Enter at the Telnet prompt. If you are connected to the ISM 824 switcher, access the Telnet prompt by typing the Escape character (Ctrl+]).

Subnetting — A Primer

It is not the purpose of this manual to describe TCP/IP protocol in detail. However, some understanding of TCP/IP subnetting (a subnet is a **sub**set of a **net**work — a set of IP devices that have portions of their IP addresses in common) is necessary in order to understand the interaction of the ISM 824 and the mail server gateway. To understand subnetting at the level required to install and operate the ISM 824, you must understand the concepts of a gateway, local and remote devices, IP addresses and octets, and subnet masks and octets.

Gateways

The ISM 824 can communicate with the e-mail server that the switcher uses for e-mail notification directly (if they are on the same subnet) or the communication can be routed via a gateway (a computer that provides a link between different subnets).

Local and remote devices

The local and remote devices are defined from the point of view of the function being described. In this manual, subnetting is an issue when you are using the controlling PC to set TCP/IP and e-mail values in the ISM 824 (see "IP Settings window" in chapter 5, "Switcher Software", and "System Settings page", in chapter 6, "HTML Operation"). When you are setting up the variables for e-mail notification, which may include subnetting, the seamless switcher is the local device and the e-mail server is the remote device.

IP addresses and octets

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, separated by dots (periods) (figure A-4). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

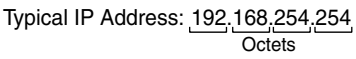


Figure A-4 — IP address and octets

Subnet masks and octets

The subnet mask (figure A-5) is used to determine whether the local and remote devices are on the same subnet or different subnets. The subnet mask consists of four numeric octets separated by dots. Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Each octet typically contains either 255 or 0. The octets determine whether or not the same octets of two IP addresses will be compared when determining if two devices are on the same subnet.

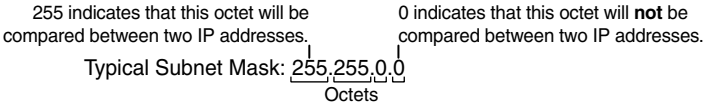


Figure A-5 — Subnet mask and octets

Determining whether devices are on the same subnet

To determine the subnet, the local device's IP address is **compared** to the remote device's IP address (figure A-6). Each address's octets are **compared** or **not compared**, depending on the value in the related subnet mask octet.

- If a subnet mask octet contains the value 255, the related octets of the local device's address and the remote device's IP address are unmasked.

  Unmasked octets are compared (indicated by ***?*** in figure A-6).

- If the subnet mask octet contains the value 0, the related octets of the local device's and remote device's IP addresses are masked.

  Masked octets are not compared (indicated by ***X*** in figure A-6).

If the unmasked octets of the two IP addresses **match** (indicated by **=** in figure A-6) (example 1), the two addresses **are on the same subnet**.

If the two unmasked fields **do not match** (indicated by ≠ in figure A-6) (example 2 and example 3), the addresses **are not on the same subnet**.

	Example 1	**Example 2**	**Example 3**
Local IP Address:	192.168.254.254	192.168.254.254	192.168.254.254
Subnet Mask:	255.255.0.0 (*?.?.X.X)*	255.255.0.0 (*?.?.X.X)*	255.255.0.0 (*?.?.X.X)*
Remote IP Address:	192.168.2.25	190.190.2.25	192.190.2.25
Match?:	=.=.*X.X* — **Match** (Same subnet)	≠.≠.*X.X* — **No match** (Different subnet)	=.≠.*X.X* — **No match** (Different subnet)

Figure A-6 — Comparing the IP addresses

Ethernet Connection, cont'd

B

Appendix B

Reference Information

Specifications

Part Numbers and Accessories

Reference Information

Specifications

Video

Routing	8 x 2 matrix up to 8 x 8 matrix, depending on model and configuration
Gain	Unity (outputs 1 and 2)
Bandwidth	450 MHz (-3 dB), fully loaded (main unit, outputs 1 and 2) 350 MHz (-3 dB for wideband single/dual boards)
Crosstalk	-80 dB @ 1 MHz, -62 dB @ 10 MHz, -52 dB @ 30 MHz (outputs 1 and 2)
Switching speed	200 ns (max.) (outputs 1 and 2)

Video input — main unit

Number/signal type	8 RGBHV, RGBS, RGsB, RsGsBs, component video (interlaced or progressive), S-video, composite video
Connectors	8 x 5 female BNC
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 for C of S-video
Minimum/maximum levels	Analog: 0.5 V to 2.0 Vp-p with no offset at unity gain
Impedance	75 ohms
Return loss	<-30 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

Video processing — ISM RGB

Decoder	9 bit digital
Digital sampling	24 bit, 8 bits per color: 13.5 MHz standard (video), 140 MHz standard (RGB)
Colors	16.78 million

Video processing — ISM VS

Decoder	9 bit digital
Digital sampling	24 bit, 8 bits per color: 13.5 MHz standard (video), 140 MHz standard (RGB)
Colors	16.78 million

Video output — wideband outputs:

- **Main unit outputs 1 and 2 (pass-through)**
- **ISM 1WB single-output wideband board (1 output)** (70-547-01)
- **ISM 2WB dual-output wideband board (2 outputs)** (70-547-02)

Number/signal type	RGBHV, RGBS, RGsB, RsGsBs, component video, HDTV digital component video, S-video, composite video (follows input type)
Connectors	
Wideband (main unit)	2 x 5 BNC female
ISM 1WB	1 x 5 BNC female
ISM 2WB	(2) 15-pin HD female
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 for C of S-video
Minimum/maximum levels	0.0 V to 0.7 Vp-p (follows input)

Video output — ISM RGB universal scaler board (70-544-01) scaled outputs

Number/signal type	1 scaled or pass-through RGBHV, RGBS, RGsB, HD digital component video (YUV)
Connectors	1 x 5 BNC female
Nominal level	1 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	0.0 V to 1.0 Vp-p
Impedance	75 ohms
Vertical frequency	50 Hz, 60 Hz, 72 Hz, 96 Hz, 100 Hz, or 120 Hz
Scaled resolution	640x480[1,2,3,4,5,6], 800x600[1,2,3,4,5,6], 852x480[1,2,3,4,5], 1024x768[1,2,3,4], 1024x852[1,2,3,4], 1024x1024[1,2,3], 1280x768[1,2,3,4], 1280x1024[1,2,3], 1360x765[1,2,3], 1360x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3], 1400x1050[1,2], 1600x1200[1,2], HDTV 480p[2], 576p[1,5], 720p[1,2], 1080p[1,2], and 1080i[1,2] [1] = at 50 Hz [2] = at 60 Hz [3] = at 72 Hz [4] = at 96 Hz [5] = 100 Hz [6] = 120 Hz

Video output — ISM VS video-only scaler board (70-545-01) scaled outputs

Number/signal type	1 scaled RGBHV, RGBS, RGsB, HD digital component video (YUV)
Connectors	1 x 5 BNC female
Nominal level	1 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	0.0 V to 1.0 Vp-p
Impedance	75 ohms
Vertical frequency	50 Hz or 60 Hz
Scaled resolution	640x480[1,2], 800x600[1,2], 852x480[1,2], 1024x768[1,2], 1280x768[1,2], 1280x1024[1,2], 1360x765[1,2], 1360x768[1,2], 1365x1024[1,2], 1366x768[1,2], 1400x1050[1,2], HDTV 480p[2], 576p[1], 720p[1,2], 1080p[1,2], and 1080i[1,2] [1] = at 50 Hz [2] = at 60 Hz

Sync — main unit

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs (follows input) (outputs 1 and 2)
Input level	0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level	AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max. input voltage	5.0 Vp-p
Max. propagation delay	15 ns, input channel to channel
Max. rise/fall time	4 ns
Polarity	Positive or negative (follows input)

Sync — ISM RGB

Input type	RGBHV, RGBS, RGsB
Output type	RGBHV, RGBS, RGsB Bi-level or tri-level on Y, R-Y, B-Y channels (component video)
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level	TTL: 5.0 Vp-p, unterminated
Input impedance	75 ohms
Output impedance	75 ohms
Polarity	Positive or negative (switch selectable)

Sync — ISM VS

Input type	Pass-through RGBHV, RGBS, RGsB
Output type	RGBHV, RGBS, RGsB Bi-level on Y, R-Y, B-Y channels (component video)
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.5 V to 5.0 Vp-p, unterminated. 4.0 Vp-p normal.
Output level	TTL: 5.0 Vp-p, unterminated
Input impedance	75 ohms
Output impedance	75 ohms
Max. input voltage	5.0 Vp-p
Max. propagation delay	30 ns (RGB pass-through

Audio

Gain	Unbalanced output: -6 dB Balanced output: 0 dB
Frequency response	20 Hz to 20 kHz, ±0.5 dB
THD + nouse	0.03% @ 1 kHz at nominal level, 0 dB gain
S/N	>90 dB, at maximum rated output drive
Crosstalk	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>90 dB @ 1 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

Audio input

Number/signal type	8 stereo, balanced/unbalanced
Connectors	(8) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms, balanced/unbalanced, DC coupled
Nominal level	+4 dBu (1.23 V), -10 dBV (316 mV)
Maximum level	+19.5 dBu, (balanced or unbalanced) at 1% THD+N
Input gain adjustment	-18 dB to +24 dB

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output

Number/signal type	2 (base model, upgradeable to 8) stereo, balanced/unbalanced
Connectors	(2, upgradeable to 8) 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.5 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced or >+15 dBu unbalanced at 1% THD+N
Maximum level (600 ohm)	>+15 dBu, balanced or unbalanced at stated 1% THD+N
Output volume range	0 to 64 (-64 dB to 0 dB) in 1 dB increments from steps 1 through 64.

Control/remote — switcher

Serial host control port	1 rear panel RS-232 or RS-422, 9-pin female D connector 1 front panel RS-232 2.5 mm mini stereo jack
Baud rate and protocol	9800 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
9-pin D connector	RS-232: 2 = TX, 3 = RX, 5 = GND RS-422: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = TX+
2.5 mm mini stereo jack	RS-232: tip = TX, ring = RX, sleeve = GND
Ethernet control port	1 RJ-45 female connector
Ethernet data rate	10/100Base-T, half/full duplex with autodetect

Ethernet protocol	ARP, ICMP (ping), TCP/IP, Telnet, HTTP
Default settings	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer ver. 6 or higher, Netscape Navigator, Telnet

General

Power	100 VAC to 240 VAC, 50/60 Hz, 30 watts, internal
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Forced air, left to right (as viewed from the front panel)
Rack mount	Yes
Enclosure type	Metal
Enclosure dimensions	5.25" H x 17.5" W x 11.2" D (3U high, full rack wide) 13.3 cm H x 44.4 cm W x 28.4 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	
Main unit	14 lbs (6.3 kg)
Shipping weight	
Main unit	21 lbs (10 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Part Numbers and Accessories

ISM 824 part number

Switcher model	Part number
ISM 824	60-787-01

Included parts

These items are included in each order for an ISM 824:

Included parts	Replacement part number
IEC power cord	
MBD 249 rack mounting brackets	70-155-01
Tweeker (small screwdriver)	
ISM 824 user's manual	
Captive screw audio connectors (8)	10-319-10
Extron Window Control Program CD	

Accessories

The following optional output cards can be ordered separately:

Adapters, power supplies, labels	Part number
ISM RGB (Universal Scaler)	70-544-01
ISM VS (Video Scaler)	70-545-01
ISM SC (Scan converter)	70-546-01
ISM 1WB (Single Output Wideband)	70-547-01
ISM 2WB (Dual Output Wideband)	70-547-02

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

www.extron.com

Extron Electronics, USA
1230 South Lewis Street
Anaheim, CA 92805
800.633.9876 714.491.1500
FAX 714.491.1517

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort, The Netherlands
+800.3987.6673 +31.33.453.4040
FAX +31.33.453.4050

Extron Electronics, Asia
135 Joo Seng Rd. #04-01
PM Industrial Bldg., Singapore 368363
+800.7339.8766 +65.6383.4400
FAX +65.6383.4664

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan
+81.3.3511.7655 FAX +81.3.3511.765